Saudi Standards, Metrology and Quality Organization
SASO

Technical Regulation for Machinery Safety – Part 3: Lifting Equipment

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Note:

Only the Arabic version of this Regulation is authentic in law and is applicable where there are differences with this translation

المواصفات السعودية
Saudi Standards

Contents

Preamble

In line with the accession of the Kingdom of Saudi Arabia (KSA) to the World Trade Organization (WTO), as per the Decree No. 244 of the Council of Ministers, dated 21/09/1426 A.H., concerning the approval of documentation on the Kingdom's accession to the WTO, and the requirements by which the KSA shall adapt its relevant systems with the principles of WTO agreements, particularly, the Technical Barriers to Trade (TBT), which stipulates that no unnecessary technical requirements shall impede the flow of commodities among the member states, and that technical requirements and methods of conformity assessment shall not discriminate between products on the basis of origin, through the issuance of Technical Regulations that include the essential requirements and standardized business procedures.

In accordance with Article 3 (Clause-1), Statute of Saudi Standards, Metrology and Quality Organization, issued in accordance with the Council of Ministers Decree No. 216, dated 17/06/1431 A.H. (31/05/2010 A.D.), stipulating that: **"SASO shall issue Saudi standards, quality systems and guidelines and conformity assessment, compatible with international standards and guidelines, that meet the requirements of the World Trade Organization (WTO) Agreement, in addition to their compliance with Islamic Sharia and serving the interests of Saudi Arabia";**

In accordance with Article 4 (Clause-2), Statute of Saudi Standards, Metrology and Quality Organization, issued in accordance with the Council of Ministers Decree No. 216, dated 17/06/1431 A.H. (31/05/2010 A.D.), stipulating that: **"SASO shall issue regulations for conformity assessment procedures of commodities, products, and services according to approved standards";**

In accordance with Article 4 (Clause-14), Statute of Saudi Standards, Metrology and Quality Organization, issued in accordance with the Council of Ministers Decree No. 216, dated 17/06/1431 A.H. (31/05/2010 A.D.), stipulating that: **"SASO shall review the laws and control regulations related to SASO's work fields, and develop them, and propose amendments thereto in line with quality and safety requirements, and refer them to competent bodies in order to review and issue them, in accordance with applicable procedures";**

In accordance with Article 6 (Clause-1), Statue of Saudi Standards, Metrology and Quality Organization, issued in accordance with the Council of Ministers Decree No. 216, dated 17/06/1431 A.H. (31/05/2010 A.D.), stipulating that: **"Subject to Article 4 of this Statute, SASO shall be the authority in charge of matters related to standards, conformity assessment procedures, granting the quality mark, metrology and calibration. All public and private sectors shall be adhered to the Saudi standards in all purchases".**

Whereas the standards of the products included in a regulation shall be a basis for the conformity of such products with the essential safety requirements included in the specified regulation. Therefore, SASO has developed this Technical Regulation.

Note: This preamble and all the annexes of this regulation shall form an integral part thereof.

Article (1) Terms and Definitions

1/1 When applying the articles of this Regulation, terms and expressions hereunder – shall have the meanings indicated in front thereof, unless the context otherwise requires:

KSA: The Kingdom of Saudi Arabia**.**

The Board: SASO's Board of Directors.

SASO: Saudi Standards, Metrology and Quality Organization

Regulatory Authorities: Governmental body/ bodies with regulatory tasks according to their specializations, that are responsible for the implementation and enforcement of technical regulations, whether in customs, markets, or manufactories.

Market Surveillance Authorities: Governmental body/ bodies responsible for carrying out market surveillance operations, to verify that the products comply with the requirements stipulated in the technical regulations issued by the Board of Directors.

Technical Regulation: A document approved by the Board that specifies the characteristics of products, associated processes and production methods, including the valid applicable administrative provisions; with which compliance is mandatory. It may include or pay attention to terms, definitions, packaging, and requirements of markings or labelling for products, services, processes or production methods.

Product: Lifting machinery and equipment, safety components and related interchangeable equipment.

Standard: A document specifying the characteristics of commodity, material, service, or anything that is subject to measurement. The standard also offers descriptions, characteristics, level of quality, dimensions, measurements, safety and security requirements. It may include or pay attention to terms, codes, testing methods, sampling, packaging, and requirements of markings or labelling.

Essential Requirements: The special requirements of the products; that may affect the safety, health, and the environment; that must be adhered to.

Hazard(s): A potential source of harm.

Risk (s): A potential risk causing damage; associated with the severity of damage.

Market Surveillance: Activities and measures carried out by the market surveillance authorities to verify that products meet the requirements stipulated in the relevant technical regulations, and to ensure that they do not pose a risk to health, safety, environment, or any other aspect related to the protection of the public interest.

Supplier:

- A product manufacturer, in case that he is resident in KSA, or the person identified as the manufacturer of the product, through linking the product to their name, or to a relevant commercial description, or any person who provides a product renewal.
- An agent, if the manufacturer is resident outside KSA or an importer in the absence of an agent of the manufacturer.
- Any person in the supply chain, whose activities may affect the product properties.

Conformity Assessment Procedures: A document approved by the Board of Directors, which describes the procedures used directly, or indirectly for the conformity assessment.

Notified Bodies: Conformity assessment bodies, approved by SASO in accordance with the Regulation of Conformity Assessment Bodies Acceptance.

Inspection Bodies: Conformity assessment bodies accredited according to ISO 17020, and approved by the SASO in accordance with the regulation for acceptance of conformity assessment bodies, to carry out inspection procedures of lifting equipment and their fittings. Before placing them for public use, or during periodic testing procedures, and issuing the inspection certificate as per the requirements specified in this Technical Regulation.

Certificate of Conformity: A certificate issued by SASO or a notified body, which ensures the conformity of a product, or any batch thereof, with the requirements of relevant standards.

Inspection Certificate: A certificate issued by the notified inspection body, which confirms that the product, facilities, factories, equipment, processes or services meet the requirements of a technical regulation or specific standards.

Supplier Declaration of Conformity: A declaration by the supplier by which it declares that a product conforms with the requirements of the applicable legislations, without the mandatory intervention of a third party neither in the design stage, nor in the production stage of the manufacturing process. A declaration may depend on testing the product in accordance with the relevant legislation.

Saudi Quality Mark: A mark granted by SASO, which declares that the supplier has established an effective management system, which ensures that the products are produced in accordance with the applicable regulations, granting procedures, and relevant Saudi standards.

Placing on Market: Launching a product for the first time in the Saudi market for which the manufacturer/supplier is responsible.

Making Available on the Market: Any supply of the product for distribution, consumption or use in KSA, in the course of a commercial activity, whether in return for payment or free of charge.

Withdrawal: Any procedure that aims to prevent placing a product in the market or in a supply chain.

Recall: Any procedure that aims to recall products made available for the end-user.

Machine(s): A set equipped or designated to be equipped with a movement system that operates on other than human or animal power. The machine consists of connected parts to perform a specific task, provided that that at least one part of it is moving.

Interchangeable Equipment: A device that the operator - after using the machine - combines or integrates with the machine to modify its function or to create a new function.

Safety Components: Parts or tools that perform a safety function, and are placed independently in the market, where the failure and/or malfunction of such parts endanger the safety of people, and such parts are not necessary for the function of the machine.

Electromagnetic Disturbance: Any electromagnetic occurrence that may limit/reduce the efficiency of equipment performance. Electromagnetic disturbance may be an electromagnetic noise, an unwanted signal, or a change in the same propagation medium.

Electromagnetic Immunity: The ability of an electrical equipment or a unit of an electrical equipment or system to perform its function without being affected by any electromagnetic disturbance.

Electromagnetic Environment: All electromagnetic phenomena that can be observed in a particular location.

Electromagnetic Compatibility: The ability of an electrical equipment, or a unit of an electrical equipment or system to function adequately in its electromagnetic environment without affecting any component of that environment by improbable electromagnetic disturbances.

Person at Risk: Any person who is totally or partly present in the danger zone specified by the manufacturer.

Operator: The person or persons who install, operate, modify, maintain, clean, repair, or move machines.

Driver: “The driver” is the operator responsible for moving the machine. The driver may be transported by the machine or on foot, as he is accompanying it, or he may direct the machine through a remote control unit.

Protector: A part of the machine used, which is a physical barrier used specially to provide protection.

Protection Device: A device that reduces risks (other than the protector), whether independent or combined with the protector.

Intended use: The use of machinery in accordance with the information contained in the instructions of use.

Reasonable Anticipated Misuse: The use of machinery in a manner contrary to what is specified in the instructions of use, except that it may be resulted from a human behavior that can be easily predicted.

Lifting Operation: A process serving specific levels moving along a specific path and dimensions, intended for the transportation of people and/or goods.

Lifting Equipment: A set of interconnected parts or components, one part of which is mobile, intended for lifting loads, with equipment or tools ready for installation and capable of working if mounted on transport means or installed independently.

Lifting Fittings: Equipment or components that are not attached to the lifting machinery, allowing the load to be held, and are placed between the machines and the load or on the load itself, and are placed independently on the market. Slings and their components/parts are considered as lifting fittings.

Chains, Ropes and Belts: Means chains, ropes or belts designed and intended for lifting purposes as part of lifting machinery or fittings.

Carrier: A part of the equipment by which persons and/or goods are supported in order to be lifted or lowered.

Guided Load: A load whose total movement is along a rigid or flexible path whose position is determined by fixed points.

Working Coefficient: The arithmetic ratio indicated on the components between the minimum load guaranteed by the manufacturer or his official representative and the maximum load.

Note: Machinery can be of the type directly controlled by the operator by riding on the machine, or can be remotely controlled by wired or non-wired means with direct or indirect visibility of the work area.

1/2 Other terms and expressions specified in this Regulation shall have the meanings specified in the applicable laws, regulations, and decrees of SASO.

Article (2) Scope

This Technical Regulation shall apply to lifting machinery, safety components and interchangeable equipment, in accordance with the definitions and terminology contained in Article (1) and the relevant standards contained in Annex (1).

- Excluded from the application of this regulation:
  1) Lifting equipment whose speed does not exceed 0.15 m/s.
  2) Means of transporting people on cableways or funicular railways.
  3) Lifting equipment intended for military and security purposes.
  4) Escalators and mechanical walkways.
  5) Temporary hoists in construction sites.

Article (3) Objectives

This Technical Regulation aims to lay out the essential requirements of lifting machinery/equipment, included in the scope of this Technical Regulation, and to identify the conformity assessment procedures with which suppliers shall comply, in order to ensure the conformity of such products to the basic requirements aiming at preservation of the environment, health and safety of the consumer, and facilitate market surveillance procedures.

Article (4) Obligations of Supplier

The supplier shall adhere to the following requirements:

4/1 General Basic Requirements for Machinery

4/1/1 General Principles

A) Obligation to the required conformity assessment procedures.

B) The supplier shall perform a risk analysis to ensure that the health and safety requirements applicable to machinery and safety components are identified, and the results of the risk analysis shall be considered when designing and manufacturing machinery, safety components and lifting equipment. The supplier – through an iterative process of risk analysis and reduction – shall:

1) Determine the functioning of machinery and the safety components that include their intended use, and define any expected misuse.

2) Determine the risks that may be generated by machinery, safety components, and associated hazardous situations and cases.

3) Assess or estimate risks, taking into account the severity of injury or potential harm to health and the likelihood that they will occur.

4) Eliminate risks or reduce risks and limit the negative impacts associated with them through preventive measures according to priority set forth in Paragraph 1/1-b of Annex (2).

C) The obligations contained in the basic health and safety requirements Clause (1/1) of Annex (2), only apply when there are similar risks arising from the use of the machinery and safety components concerned in the probable conditions expected by the manufacturer or supplier, or in the expected extraordinary situations.

D) Conformity assessment procedures shall include the requirements for machinery and safety components, and the instructions provided in Annex (2).

E) It shall be taken into account when designing the machine, the fulfillment of the basic health and safety requirements stipulated in Annex (2).

4/2 Safety of Control Systems

4/2/1 Control systems shall be designed and constructed in a way as to prevent hazardous situations from occurring, and they shall be designed and manufactured to meet the following:

- Withstand expected operating stresses and external influences.
- Errors or malfunctions in the control systems or software shall not lead to hazardous situations.
- Reasonably anticipated human errors during operation shall not lead to hazardous situations.
- Equipment must not start unexpectedly.
- Software and equipment parameters shall not change in a random manner, which may lead to hazardous situations.
- There shall be no obstruction to stop the equipment when a stop command has been given.
- No moving part of the machinery or part held by the machinery must fall or be ejected.
- There shall be no obstacle when automatically or manually stopping the moving parts.
- Protection devices shall remain fully functional to prevent the machine from working in the event of a malfunction.
- The safety-related parts of the control systems shall be applied to the entire equipment.

4/2/2 In cases of remote control, automatic shutdown shall take place in the event that correct signals are not received, including cases of loss of connection.

4/3 Prevention of Mechanical Risks

4/3/1 Risks due to instability

Machinery shall be designed, manufactured and installed in such a way that the required stability is maintained in all conditions, whether the machine is in service or out of service, including all stages of transportation, assembly and dismantling, and during testing. The supplier shall use and verify appropriate methods to this end.

4/3/2 Machinery running on rails and/or tracks

Machines that require rails or tracks to be steered shall be provided with devices that operate on the tracks to prevent derailment, and to reduce the risk of deviation or failure of these tracks, devices and equipment shall be provided that prevent the equipment, components or the load from falling or overturning.

4/3/3 Mechanical strength

Machinery, lifting fittings and their components shall be able to withstand the stresses or loads to which they are exposed, while taking into account external influences such as the effects of the surrounding environment and people in all processes, including all stages of transportation, assembly, dismantling and operation.

Machinery and lifting fittings shall be designed and manufactured to prevent failure due to machine fatigue, with due regard to their intended use.

Suitable manufacturing materials shall be selected based on the expected working environment, taking into account wear and other influences such as temperature extremes, machine life and duration of use.

Machinery and lifting fittings shall be designed and manufactured in such a way that they can withstand excessive stresses or loads upon testing the machine without permanent distortion or defects. Values shall be calculated and selected to guarantee an adequate level of safety. If the machine allows a number of simultaneous movements, the tests must be carried out by combining the movements concerned under the conditions of the intended use.

4/3/4 Pulleys, wheels, ropes and chains

Lifting fittings shall have diameters commensurate to the size of the ropes or chains that can be installed, and the fittings shall be designed, manufactured and installed in a manner that prevents slipping or coming off.

Ropes used to lift or support a load shall not have any splicing other than at their ends, except in fittings whose design require it to be modified regularly according to the needs of the use.

Ropes and chains, including their ends, shall have a working coefficient selected in such a way as to ensure an adequate level of safety.

The supplier shall carry out the necessary tests to determine the working coefficient of each type of chain or rope, including its ends.

4/3/5 Lifting fittings and their components

Lifting fittings shall be sized to match their components. Fatigue and wear resulting from operations and duty cycles shall be taken into account, consistent with their expected life-span, as specified in the use and operating conditions of a particular application.

The working coefficient of ropes and chains and their metal components, including welded joints, shall be selected in such a way as to ensure an adequate level of safety.

The material, method of manufacture, dimensions and intended use shall be taken into account with respect to textile ropes, slings or fittings, and in such a manner as to ensure an adequate level of safety, provided that they shall not include any knots or connections at their ends, except for endless slings.

The maximum working load for multi-legged slings shall be determined on the basis of the working coefficient of the weakest leg, the number of legs and the reduction factor which depends on the configuration of the equipment and its components.

The necessary tests shall be carried out on lifting fittings and components to ensure an adequate level of safety.

4/3/6 Control of movements

Movement control devices must operate to ensure the safety of the machines and the safe operation, including:

- Machinery shall be designed, and constructed or equipped with devices so that movement or load is maintained within the specified limits. A warning, when required, shall precede the operation of such devices.
- Where several fixed or rail-mounted machines can be operated simultaneously in the same place, such machinery shall be designed and installed in such a way as to allow the installation of systems to avoid the risks of collision.
- Machinery shall be designed and installed in such a way as to prevent hazards resulting from the load, such as falling unexpectedly, even in the event of partial or total failure of the power source or when the operator stops operating the machine.
- It shall not be possible to lower the load only by friction break under normal operating conditions, except in cases of machinery whose function requires it to operate in such a way.

4/3/7 Movement of the load during use

The operating position of the machinery shall be chosen in such a way as to ensure the widest possible view of the trajectories of the moving parts in order

to avoid potential collisions with people or other machinery and equipment being operated at the same time.

Machinery with guided loads shall be designed in such a way as to prevent persons from being injured by the movement of the load, carrier or counterweights, if any.

4/4 Carrier

It shall be taken into consideration when designing the carrier to provide sufficient space and support for the maximum number of persons and/or rated load of such equipment, and shall not impede access or use by operators in order to facilitate use.

4/4/1 Machinery for fixed landings

Movement of the carrier of the machine for fixed landings shall be precisely and rigidly guided when performing landings, scissor systems are regarded as rigid guidance.

4/4/2 Ways of access

Machinery shall be designed and installed in a way to ensure that the carrier remains stationary during access, especially when it is being loaded or unloaded, and in a way to ensure that the difference in level between the carrier and the landing does not create a risk such as tripping.

4/4/3 Risks due to contact with the moving carrier

The range of load movement shall be made inaccessible during normal operation.

Sufficient free space shall be provided either by providing isolated areas or by mechanical devices that impede the movement of the carrier where there is a risk such as crushing to persons between the carrier and other fixed parts during inspection or maintenance.

4/4/4 Risks due to the load falling off the carrier

Machinery shall be designed and constructed in such a way as to prevent the risk of loads falling off the carrier.

4/4/5 Landing

Risks due to contact of persons at landings with the moving carrier or other moving parts shall be prevented.

Other risks that may occur as a result of people falling into the range of movement when the carrier is not present during the landing operations shall be prevented by installing guards, provided that these guards shall not open in the direction of movement. The guards shall be provided with a device controlled by the carrier position to prevent the following:

- Hazardous carrier movements until guards are closed and locked.

- Hazardous opening of a guard until the carrier has stopped at the landing position.

4/4/6 Fitness for purpose

The supplier shall ensure that appropriate measures are taken, when placing lifting equipment and fittings on the market, and that the equipment and fittings that are ready for use – whether manually or power-operated – meet the requirements to perform the specified functions safely.

Necessary tests shall be carried out on all lifting equipment ready for use, and in cases where the equipment cannot be assembled and installed at the premises of the manufacturer or the official representative of the manufacturer, the necessary measures shall be taken at the place of use.

4/5 Requirements for Machinery Other than Manual Effort

4/5/1 Control of movements

Control devices that require the constant presence of the operator shall be used to control the movement of machinery or equipment.

As for movements where there is no risk of collision, it is possible to use control devices that allow automatic stopping at pre-selected positions of the machine.

4/5/2 Loading control

Machinery or equipment shall be equipped with devices to warn the driver and prevent dangerous movements in the following cases:

- Overloading, either as a result of the maximum operating load or exceeding the maximum load specified by the manufacturer.
- Overturning, resulting from the load exceeding the specified overturning torque or exceeding the permissible limits specified by the manufacturer.

4/5/3 Rope-guided load

Rope carriers or tractors their carriers shall be equipped with counterweights or a device that permits permanent tension control.

4/6 Information and Markings

4/6/1 Chains, ropes and belts

Lifting fittings that are not part of the machinery, such as lifting chains, ropes or belts, must bear the following information:

- Name and address of the manufacturer or the official representative.
- Nominal size.
- Its construction.
- The material from which it is made.

- Any metallurgical treatment applied to the material.
- Test methods used.
- In-service safe operating load limit or the range of safe operating load values depending on the intended use.

Where this is not possible, it shall be placed on a plate or a non-removable ring bearing the name and address of the manufacturer or the official representative, and the reference to the relevant certificate.

4/6/2 Lifting fittings

Lifting fittings must show the following information:

- Materials used, where such information is necessary for safe use.
- Working load limit.

Where it is not possible to mark the lifting fittings, the information shall be displayed independently on a plate or other equivalent means and securely affixed to the fitting.

The information shall be clearly written and located in a prominent place in a way that is difficult to remove.

4/6/3 Lifting equipment

The maximum working load shall be prominently marked on the machinery. The marking shall be legible, and in a way that is difficult to remove.

Where the maximum working load depends on the configuration of the machine, each operation position shall be provided with a plate indicating the permitted load for each configuration, diagrammatically or by tables, as well as the safe working load for each configuration.

Machinery intended for lifting goods only, equipped with a carrier, which allows access to persons, shall be a clear and indelible warning signs prohibiting the lift of persons. Such warnings shall be visible at all positions where access is possible.

4/7 Instructions and instructions

4/7/1 Lifting fittings

Each lifting fittings shall be accompanied with instructions setting out at least the following instructions:

- The intended use.
- Limits of use for lifting fittings.
- Instructions for assembly, installation, use and maintenance.
- Tests applied.

4/7/2 Lifting equipment

Lifting equipment shall be accompanied with instructions containing the following information:

- The technical characteristics of the machinery, in particular the maximum working load, in addition to a copy of the load plate or table, where appropriate.
- The reactions at the supports or anchors, and the characteristics of the tracks, if possible.
- Definition of the ballast and the means of its installation, if possible.
- The contents of the logbook, if it is not supplied with the machinery.
- Usage instructions, especially in the absence of a direct view of the load by the operator.
- Reports detailing the tests performed by the manufacturer or the official representative.
- With regard to equipment that is assembled outside the manufacturer's premises in the form in which it is to be used, the necessary instructions for performing the procedures referred to in the provisions of this regulation shall be attached, prior to being put into service.

4/8 Efficiency of Machinery Operators

Operators of lifting machinery and equipment shall have the expertise and competencies that qualify them to carry out the operations, while keeping the documents that prove their eligibility to operate the machines.

The necessary licenses for machinery operators shall be obtained from the competent authorities.

4/9 Technical Requirements

The supplier shall meet the technical requirements for lifting equipment, safety components and related interchangeable equipment, as follows:

A) Lifting equipment, safety components and related interchangeable equipment shall meet the technical requirements set out in the standards contained in Annex (1) of this Technical Regulation.

B) Lifting equipment, safety components and related interchangeable equipment shall be designed and manufactured in such a way as to meet the basic technical requirements described in Annex (2), and the essential safety and health requirements for lifting equipment.

C) Availability of an effective quality management system at the factory, (A factory that obtained the quality management system certificate in

accordance with ISO 9001 shall be deemed as met the requirements of this clause).

4/10 Metrological Requirements

International system of units (SI Units), multiples or parts thereof shall be used for lifting machinery and equipment, safety components and related interchangeable equipment, during design, manufacturing or trading, in accordance with the Saudi Measurement and Calibration System.

4/11 Packaging Requirements

A) Ensure that the lifting equipment are assembled and arranged safely and properly during storage and transportation operations, in accordance with the packing requirements stipulated in the relevant standard.

B) Ensure that the packing materials for lifting equipment are free of lead or any heavy metals.

Article (5) Labelling

The labelling for lifting equipment intended for placement and display on the market shall fulfill the following:

5/1 Labels on the product shall meet the technical requirements mentioned in this Technical Regulation and the relevant standards contained in Annex (1) of this Technical Regulation.

5/2 Labels shall include warnings and operation instructions and the sales documentation stipulated in Annex (2), and shall be written in clear script and in a way that is difficult to be removed.

5/3 The data shall be written in Arabic and may be written in another language in addition to the Arabic, and what have been written in Arabic should prevail.

5/4 All information used in the labelling shall be correct and proven.

5/5 Images and phrases used on the product packaging shall not violate the public order, public morals and Islamic values prevailing in the KSA.

Article (6) Conformity Assessment Procedures

6/1 The supplier - responsible for placing on the market - shall obtain a certificate of conformity issued by SASO, or whom it authorizes, in accordance with the Conformity Assessment Form (Type 1a) as per standard ISO/IEC 17067 as shown in Annex (2)**.**

6/2 Safety components, interchangeable equipment, and spare parts for lifting equipment – for models that obtained a certificate of conformity – shall be exempted from the conformity assessment procedures, supplied to the Saudi market by the manufacturer or the official representative of the manufacturer in the KSA.

6/3 The supplier of used lifting equipment shall obtain an inspection certificate issued by a notified body approved by SASO.

6/4 An inspection certificate issued by a notified body approved by SASO shall be obtained after installing lifting equipment and prior to being put in service.

6/5 Periodic examinations and inspections shall be carried out on lifting equipment and its fittings to ensure their safety and the safety of their components when in use, including transportation, maintenance, and modification of equipment.

6/6 The notified body shall carry out the conformity assessment procedures according to the specified form, in order to ensure fulfillment of the requirements of this regulation and the relevant Saudi Standards set forth in Annex (1).

6/7 The product shall be accompanied by a technical file that includes the following:

A) Supplier (Manufacturer/Importer) Declaration of Conformity in accordance with the form attached in Annex (3).

B) Risk Assessment Document as specified in Annex (4).

6/8 The supplier shall cooperate with the Regulatory Authorities and Market Surveillance Authorities by providing the technical file documents, certificates of conformity, and any other documented information proving the conformity of the product to the requirements of this Technical Regulation, upon request.

6/9 Lifting machinery and equipment, safety components and related interchangeable equipment that have obtained the Saudi Quality Mark or its equivalent shall be deemed as met the requirements stipulated in this Technical Regulation.

6/10 In the event that the machine cannot be imported as a fully assembled finished product, and due to transport requirements with respect to logistics and permitted transport limits, the machine is allowed to be transported as separate parts, and a certificate of conformity for the finished product (model) shall be issued, provided that proof is submitted that the parts are dependent on the approved model.

Article (7) Responsibilities of Regulatory Authorities (Customs Ports and Factories)

Regulatory Authorities, as a part of their competence and powers, shall:

7/1 Verify that lifting machinery and equipment, safety components and related interchangeable equipment fulfill the specified conformity assessment procedures, and the technical documents attached to the consignments.

7/2 Randomly take samples of lifting machinery and equipment, safety components and relevant interchangeable equipment, and refer such samples to the competent laboratories to ensure their compliance with the requirements contained in this Technical Regulation.

7/3 Regulatory Authorities have the right to charge suppliers (manufacturers and importers) with the costs of tests and associated fees.

7/4 In case of a product non-conformity, Regulatory Authorities shall withdraw such products from warehouses, and take the necessary legal measures.

Article (8) Responsibilities of Market Surveillance Authorities

Market Surveillance Authorities, as a part of their competence and powers, shall:

8/1 Apply market surveillance procedures to the products displayed in the markets, and the products stored in the warehouses of traders and manufacturers, in order to verify the safety of the products and the extent of fulfillment of the requirements set forth in this Technical Regulation and the relevant standards.

8/2 Take samples of the product, whether from the market or the warehouse of suppliers (manufacturers and importers), in order to conduct the necessary tests and to ensure the conformity of such products to the requirements stipulated in this Technical Regulation.

8/3 In case of non-conformity of a product – supplied and stored – with the requirements of this Technical Regulation, Market Surveillance Authorities shall take all administrative measures including withdrawal and recall of such products. Procedures and penalties – stipulated in Article (9) – shall be applied after taking the necessary measures.

Article (9) Violations and Penalties

9/1 It is prohibited to manufacture, import, place display, or even advertise products that do not comply with the provisions of this Technical Regulation.

9/2 Failure to meet the requirements of this Technical Regulation shall be a sufficient reason for Market Surveillance Authorities and Regulatory Authorities to consider the product as non-conforming, which may pose a risk to the health and safety of the consumer and the environment, in the following cases:

A) Non-fixation or improper fixation of conformity labels, Saudi Quality Mark, or its equivalent.

B) Failure to issue or improper issuance of the Certificate of Conformity or the Supplier Declaration of Conformity.

C) Unavailability or incompleteness of the technical documentation.

D) Unavailability or incompleteness of product data/labels or the usage guidelines.

9/3 In case of a violation of the provisions of this Technical Regulation, Market Surveillance Authorities – as the case may be - shall take all necessary actions to eliminate such violations, and their effects from the market. To this end, Market Surveillance Authorities may:

A) Mandate the violating party – responsible for placing and displaying the product – to withdraw the product from the warehouses or markets in order to rectify such violations, if possible. The product may be exported or destroyed (according to the nature of the product) within the period specified by the Market Surveillance Authorities.

B) Withdraw, restrain or destroy the products, or take any other necessary action to recall such products from the markets. Market surveillance Authorities – as the case may be - may announce the withdrawal of the product from the markets, and the violating party shall bear all associated expenses.

9/4 When a violation is detected, SASO shall take the necessary measures against such products that violate the requirements of this Technical Regulation, including the cancellation of the relevant certificate of conformity, while taking the necessary measures with the notified body that issued the certificate, in accordance with the Regulation of Conformity Assessment Bodies Acceptance.

9/5 Without prejudice to any more severe sanction stipulated in the applicable regulations, whosoever violates the requirements of the adopted standards for products included in the scope of this Technical Regulation shall be subject to the sanctions stipulated in the Anti-Commercial Fraud Law.

Article (10) General Provisions

10/1 The supplier bears full legal responsibility for the implementation of the requirements of this Technical Regulation, and shall be subject to the penalties stipulated in the Anti-Commercial Fraud Law and/or any related laws, in case any violation of the articles of this Technical Regulation is proven.

10/2 This Technical Regulation shall not prevent the supplier to comply with all other systems/regulations applicable in the KSA; pertaining to trading, transporting, or storing the product, in addition to the rules/regulations related to the environment, security, and safety.

10/3 All suppliers of lifting machinery and equipment, safety components and related interchangeable equipment, that are subject to the provisions of this Technical Regulation shall provide the inspectors of the Regulatory Authorities and Market Surveillance Authorities with all the facilitations and necessary information, when required, to carry out their assigned tasks.

10/4 Where a new case originates that cannot be treated under the provisions of this Technical Regulation, or where a dispute arises as a result of the application of those provisions, such matter shall be referred to the competent committee in SASO, in order to issue a proper resolution regarding the case or dispute, while taking the public interest into consideration.

10/5 The supplier may submit a new request after elimination of the reasons of rejection, and after the necessary rectifications have been made. The supplier shall be responsible for any additional expenses determined by SASO.

10/6 SASO shall examine the complaints received regarding the products that have obtained a certificate of conformity or a Quality Mark, verify the validity of such complaints, and take the necessary legal actions in case of any violations.

10/7 SASO shall have the right to annul the Certificate of Conformity or the Quality Mark license if the supplier violates the provisions of this Technical Regulation, in accordance with the General Technical Regulation for Saudi Quality Mark, and shall take the legal actions to ensure the preservation of the rights of SASO.

10/8 Upon any modifications to the product during the validity period of the certificate of conformity or the Quality Mark license (except for formal modifications), the certificate or license for such product shall be annulled, and a new request shall be submitted.

10/9 SASO exclusively have the right to interpret the articles of this Technical Regulations. All beneficiaries of the application of this Technical Regulation shall adhere to the interpretations issued by SASO.

Article (11) Transitional Provisions

11/1 The supplier shall adhere to the provisions of this Technical Regulation within 180 days as of the date of publication in the Official Gazette.

11/2 Subject to the provisions of item (1) of this article, suppliers shall rectify their situation on the market in accordance with the provisions of this Technical Regulation within a period of 365 days as of the date of publication in the Official Gazette.

11/3 This Technical Regulation – once adopted – shall supersede all preceding regulations in the scope of this Technical Regulation.

Article (12) Publication

This Technical Regulation shall be published in the Official Gazette.

المواصفات السعودية
Saudi Standards

Annex (1)

A) List of Lifting Machinery and Equipment Products and Related Standards

No.	Standard Title in Arabic	Standard Title in English	Standard No.
1	معدات الرفع – مدى أقصى حمل للنماذج الأساسية	Lifting appliances -- Range of maximum capacities for basic models	SASO GSO ISO 2374
2	الرافعات وأجهزة الرفع – التصنيف – الجزء الأول: عام	Cranes – Classification – Part 1: General	SASO GSO ISO 4301-1
3	معدات الرفع – التصنيف – الجزء الثاني: الرافعات المتنقلة	Lifting appliances – Classification – Part 2: Mobile cranes	SASO GSO ISO 4301-2
4	الرافعات – التصنيف – الجزء الثالث: الرافعات البرجية	Cranes – Classification – Part 3: Tower cranes	SASO GSO ISO 4301-3
5	الرافعات والمعدات ذات الصلة – التصنيف – الجزء الرابع: الرافعات ذات الذراع	Cranes and related equipment – Classification – Part 4: Jib cranes	SASO GSO ISO 4301-4
6	الرافعات – التصنيف – الجزء الخامس: الرافعات (الأوناش) العلوية المتحركة ذات المنصات والأوناش الجسرية المتنقلة	Cranes – Classification – Part 5: Overhead travelling and portal bridge cranes	SASO GSO ISO 4301-5
7	الرافعات – تقدير حمل الرياح	Cranes- wind load assessment	SASO ISO 4302
8	الرافعات الأخرى غير النقالي والعائمة – المتطلبات العامة للاستقرار (للثبات)	Cranes other than mobile and floating cranes – General requirements for stability	SASO GSO ISO 4304
9	الرافعات النقالة – تحديد الثبات	Mobile cranes – Determination of stability	SASO ISO 4305
10	الرافعات – المفردات – الجزء الأول : عام	Cranes – Vocabulary – Part 1: General	SASO ISO 4306-1
11	الرافعات – المفردات – الجزء الثاني: الرافعات النقالة	Cranes – Vocabulary – Part 2: Mobile cranes	SASO ISO 4306-2
12	الرافعات – المفردات – الجزء ٣: الرافعات البرجية	Cranes – Vocabulary – Part 3: Tower cranes	SASO ISO 4306-3
13	الرافعات – المصطلحات – الجزء الخامس: الجسر والرافعات القنطرية المتحركة	Cranes -- Vocabulary -- Part 5: Bridge and gantry cranes	SASO ISO 4306-5
14	الرافعات – الحبال المعدنية – العناية والصيانة والتركيب والفحص والإحلال	Cranes – Wire ropes – Care, maintenance, installation, examination and discard	SASO ISO 4309
15	الرافعات – الرموز التخطيطية – الجزء الأول: العامة	Cranes -- Graphic symbols -- Part 1: General	SASO GSO ISO 7296-1

16	الرافعات – الرموز التخطيطية – الجزء الثاني: الرافعات النقالة	Cranes -- Graphical symbols -- Part 2: Mobile cranes	SASO GSO ISO 7296-2
17	الرافعات – الرموز التخطيطية – الجزء الثالث: الرافعات البرجية	Cranes -- Graphical symbols -- Part 3: Tower crane	SASO GSO ISO 7296-3
18	الرافعات ومعدات الرفع – الخصائص الفنية ووثائق المطابقة للمواصفات	Cranes and lifting appliances -- Technical characteristics and acceptance documents	SASO GSO ISO 7363
19	معدات الرفع – وسائل التحكم – تصميم وخصائص المتطلبات – الجزء الأول: المبادئ العامة	Lifting appliances -- Controls -- Layout and characteristics -- Part 1: General principles	SASO GSO ISO 7752-1
20	الرافعات – نموذج وخصائص التحكم – الجزء ٢: الترتيبات والمتطلبات الأساسية للرافعات المتنقلة	Cranes -- Control layout and characteristics -- Part 2: Basic arrangement and requirements for mobile cranes	SASO ISO 7752-2
21	الرافعات – تخطيط التحكم والخصائص – الجزء الثالث: الرافعات البرجية	Cranes -- Control layout and characteristics -- Part 3: Tower cranes	SASO GSO ISO 7752-3
22	الرافعات – وسائل التحكم – التخطيط والخصائص – الجزء: الرافعات ذات الذراع	Cranes -- Controls -- Layout and characteristics -- Part 4: Jib cranes	SASO GSO ISO 7752-4
23	أجهزة الرفع – أدوات التحكم – التخطيط والخواص – الجزء الخامس: الرافعات (الأوناش) العلوية المتحركة ذات المنصات والأوناش الجسرية المتنقلة	Lifting appliances -- Controls -- Layout and characteristics -- Part 5: Overhead travelling cranes and portal bridge cranes	SASO GSO ISO 7752-5
24	الرافعات (الأوناش) – المقصورات (الكبائن) – الجزء الأول: عام	Cranes -- Cabins and control stations -- Part 1: General	SASO ISO 8566-1
25	الرافعات – المقصورات (الكبائن) ومحطات التحكم – الجزء ٢: الرافعات النقالة	Cranes – Cabins and control stations – Part 2: Mobile cranes	SASO ISO 8566-2
26	الرافعات – الكبائن (المقصورات) ومحطات التحكم – الجزء ٣: الرافعات البرجية	Cranes -- Cabins and control stations -- Part 3: Tower cranes	SASO ISO 8566-3
27	الرافعات – الكبائن (المقصورات) – الجزء الرابع: الرافعات ذات الذراع	Cranes -- Cabins -- Part 4: Jib cranes	SASO GSO ISO 8566-4
28	الرافعات – المقصورات (الكبائن) ومحطات التحكم – الجزء ٥: الرافعات العلوية المتحركة ذات المنصات والرافعات الجسرية المتنقلة	Cranes – Cabins and control stations – Part 5: Overhead travelling and portal bridge cranes	SASO ISO 8566-5
29	الرافعات – مبادئ تصميم الأحمال ومجموعات الأحمال المركبة – الجزء الأول: عام	Cranes -- Design principles for loads and load combinations -- Part 1: General	SASO GSO ISO 8686-1

30	الرافعات – مبادئ تصميم الأحمال ومجموعات الأحمال المركبة – الجزء ٢: الرافعات النقالة	Cranes – Design principles for loads and load combinations – Part 2: Mobile cranes	SASO ISO 8686-2
31	الرافعات – مبادئ تصميم الأحمال ومجموعات الأحمال المركبة – الجزء ٣: الرافعات البرجية	Cranes – Design principles for loads and load combinations – Part 3: Tower cranes	SASO ISO 8686-3
32	الرافعات – مبادئ تصميم الأحمال ومجموعات الأحمال المركبة –الجزء الرابع: الرافعات الذراعية	Cranes -- Design principles for loads and load combinations -- Part 4: Jib cranes	SASO GSO ISO 8686-4
33	الرافعات – مبادئ تصميم الأحمال ومجموعات الأحمال المركبة –الجزء ٥: الرافعات العلوية المتحركة ذات المنصات والرافعات الجسرية المتنقلة	Cranes – Design Principles For Loads and Load Combinations – Part 5 : Overhead Travelling and Portal Bridge Cranes	SASO ISO 8686-5
34	الرافعات والأجهزة ذات العلاقة – متطلبات الدقة لقياس البارامترات أثناء الاختبار	Cranes and related equipment -- Accuracy requirements for measuring parameters during testing	SASO ISO 9373
35	الرافعات – المعلومات المقدمة – الجزء الأول: عام	Cranes -- Information to be provided -- Part 1: General	SASO GSO ISO 9374-1
36	الرافعات – المعلومات المقدمة للاستفسارات والطلبات والعروض التجهيز – الجزء الثالث: الرافعات البرجية	Cranes -- Information to be provided for enquiries, orders, offers and supply -- Part 3: Tower cranes	SASO ISO 9374-3
37	الرافعات – المعلومات التي يتعين تقديمها – الجزء الرابع: الرافعات ذات الذراع	Cranes -- Information to be provided -- Part 4: Jib cranes	SASO GSO ISO 9374-4
38	الرافعات – المعلومات التي يتعين تقديمها – الجزء ٥: الرافعات العلوية المتنقلة ورافعات الجسور المتنقلة	Cranes -- Information to be provided -- Part 5: Overhead travelling cranes and portal bridge cranes	SASO ISO 9374-5
39	الرافعات – الفحص – الجزء الأول: عام	Cranes- Inspections -- Part 1: General	SASO GSO ISO 9927-1
40	الرافعات – الفحص – الجزء الثالث: الرافعات البرجية	Cranes -- Inspections -- Part 3: Tower cranes	SASO GSO ISO 9927-3
41	الرافعات – دليل/كتيب تشغيل الرافعة – الجزء ١: عام	Cranes – Crane operating manual – Part 1: General	SAS ISO 9928-1
42	لرافعات – دليل/كتيب تشغيل الرافعة – الجزء ٢:الرافعات النقالة	Cranes – Crane operating manual – Part 2: Mobile cranes	SASO ISO 9928-2
43	الرافعات – بطاقات المعلومات المميزة – الجزء ١: عام	Cranes – Information labels – Part 1: General	SASO ISO 9942-1
44	الرافعات – تصنيف المعلومات – الجزء الثالث: الرافعات البرجية	Cranes -- Information labels -- Part 3: Tower cranes	SASO GSO ISO 9942-3

45	الرافعات – أجهزة التحديد والتبيين – الجزء الأول: عام	Cranes -- Limiting and indicating devices -- Part 1: General	SASO GSO ISO 10245-1
46	الرافعات – أجهزة التحديد والتأشير – الجزء الثاني: الرافعات النقالة	Cranes -- Limiting and indicating devices -- Part 2: Mobile cranes	SASO GSO ISO 10245-2
47	الرافعات – أجهزة التحديد والتأشير – الجزء الثالث: الرافعات البرجية	Cranes -- Limiting and indicating devices -- Part 3: Tower cranes	SASO GSO ISO 10245-3
48	الرافعات – أجهزة التحديد والتأشير – الجزء الرابع: الرافعات الذراعية	Cranes -- Limiting and indicating devices -- Part 4: Jib cranes	SASO GSO ISO 10245-4
49	الرافعات – أجهزة التحديد والتأشير – الجزء الخامس: النقالات العلوية ورافعات الجسور المتنقلة	Cranes -- Limiting and indicating devices -- Part 5: Overhead travelling and portal bridge cranes	SASO GSO ISO 10245-5
50	الرافعات – متطلبات الآليات – الجزء الأول: عام	Cranes -- Requirements for mechanisms -- Part 1: General	SASO GSO ISO 10972-1
51	الرافعات – متطلبات الآليات – الجزء الثاني: الرافعات النقالة	Cranes -- Requirements for mechanisms -- Part 2: Mobile cranes	SASO GSO ISO 10972-2
52	الرافعات – متطلبات الآليات – الجزء الثالث: الرافعات البرجية	Cranes -- Requirements for mechanisms -- Part 3: Tower cranes	SASO GSO ISO 10972-3
53	الرافعات – متطلبات الآليات – الجزء الرابع: الرافعات الذراعية	Cranes – Requirements for mechanisms – Part 4: Jib cranes	SASO GSO ISO 10972-4
54	الرافعات – متطلبات الآليات – الجزء الخامس: الجسر والرافعات القنطرية المتحركة	Cranes -- Requirements for mechanisms -- Part 5: Bridge and gantry cranes	SASO GSO ISO 10972-5
55	الرافعات – قياس كتلة الرافعة وملحقاتها	Cranes -- Measurement of the mass of a crane and its components	SASO GSO ISO 11629
56	الرافعات – قياس اصطفاف العجلة	Measurement of wheel – Cranes alignment	SASO GSO ISO 11630
57	الرافعات – المنافذ والواقيات والقيود – الجزء الأول: عام	Cranes -- Access, guards and restraints -- Part 1: Genera	SASO GSO ISO 11660-1
58	الرافعات – المنافذ والواقيات والقيود – الجزء ٢: الرافعات النقالة	Cranes – Access, guards and restraints – Part 2: Mobile cranes	SASO ISO 11660-2
59	الرافعات – المنافذ والواقيات والقيود – الجزء الثالث: الرافعات البرجية	Cranes -- Access, guards and restraints -- Part 3: Tower cranes	SASO GSO ISO 11660-3
60	الرافعات – المنافذ والواقيات والقيود – الجزء الرابع: الرافعات ذات الأذرع	Cranes -- Access, guards and restraints -- Part 4: Jib cranes	SASO ISO 11660-4
61	الرافعات – المنافذ والواقيات والقيود – الجزء الخامس: الجسور والرافعات القنطرية المتحركة	Cranes -- Access, guards and restraints -- Part 5: Bridge and gantry cranes	SASO GSO ISO 11660-5

62	الرافعات النقالة – عرض مخططات القدرة المقدرة	Mobile cranes -- Presentation of rated capacity charts	SASO GSO ISO 11661
63	الرافعات النقالة – تحديد تجريبي لأداء الرافعة – الجزء الأول: وحدات الأحمال وأنصاف الأقطار	Mobile cranes – Experimental determination of crane performance – Part 1: Tipping loads and radii	SASO GSO ISO 11662-1
64	الرافعات المتحركة – التقدير التجريبي لأداء الرافعات – الجزء ٢: القدرة الهيكلية في ظل التحميل الساكن	Mobile cranes -- Experimental determination of crane performance -- Part 2: Structural competence under static loading	SASO GSO ISO 11662-2
65	الرافعات – المفردات المتوفرة	Cranes — Availability- Vocabulary	SASO GSO ISO 11994
66	الرافعات – تثبيت الأجهزة أثناء الخدمة وخارج الخدمة وأوضاعها – الجزء الأول: عام	Cranes - Anchoring devices for in-service and out-of-service conditions – Part 1: General	SASO GSO ISO 12210-1
67	الرافعات – تثبيت الأجهزة أثناء الخدمة وخارج الخدمة وأوضاعها – الجزء الرابع: الرافعات الذراعية	Cranes - Anchoring devices for in-service and out-of-service conditions – Part 4: Jib cranes	SASO GSO ISO 12210-4
68	الرافعات – كتيب الصيانة – الجزء الأول: عام	Cranes -- Maintenance manual -- Part 1: General	SASO GSO ISO 12478-1
69	الرافعات – الاستخدام الآمن – الجزء ١: عام	Cranes -- Safe use -- Part 1: General	SASO GSO ISO 12480-1
70	الرافعات – الاستخدام الآمن – الجزء ٣: الرافعات البرجية	Cranes – Safe use – Part 3: Tower cranes	SASO ISO 12480-3
71	الرافعات – الاستخدام الآمن – الجزء ٤: الرافعات الذراعية	Cranes - Safe use – Part 4: Jib cranes	SASO GSO ISO 12480-4
72	الرافعات – مراقبة فترة العمل الخاصة بتصميم الرافعة	Cranes -- Monitoring for crane design working period	SASO ISO 12482
73	الرافعات – التفاوت المسموح به للعجلات والمنصات ومسارات العبور – الجزء ١: عام	Cranes - Tolerances for wheels and travel and traversing tracks – Part 1: General	SASO GSO ISO 12488-1
74	الرافعات – التفاوت المسموح به للعجلات والمنصات ومسارات العبور – الجزء ٤: الرافعات الذراعية	Cranes - Tolerances for wheels and travel and traversing tracks – Part 4: Jib cranes	SASO GSO ISO 12488-4
75	الرافعات – علامات السلامة والخطر – المبادئ العامة	Cranes -- Safety signs and hazard pictorials -- General principles	SASO GSO ISO 13200
76	الرافعات – قياس بارومترات الوقت والسرعة	Cranes -- Measurement of velocity and time parameters	SASO GSO ISO 13202
77	الرافعات – متطلبات اختبار الأحمال	Cranes -- Requirements for test loads	SASO ISO 14518

78	الرافعات – متطلبات الأمان لرافعات المحمل	Cranes -- Safety requirements for loader cranes	SASO GSO ISO 15442
79	الأوناش والرافعات – انتقاء الأحبال السلكية والاسطوانات والبكرات المحززة	Cranes and hoists -- Selection of wire ropes, drums and sheaves	SASO GSO ISO 16625
80	الرافعات – رافعات الجسور المتنقلة (الأوناش) – المواصفة القياسية الدولية للمتطلبات والتوصيات حول التصميم والتصنيع	Cranes -- Bridge and gantry cranes -- International Standards for design and manufacturing requirements and recommendations	SASO ISO/TR 16880
81	الرافعات – حساب تصميم عجلات السكك الحديدة وهيكل الهدم المرتبط بمسار العربة – الجزء ١: عام	Cranes – Design calculation for rail wheels and associated trolley track supporting structure – Part 1: General	SASO ISO 16881-1
82	الرافعات – نظام الأمان في الرافعات المتحركة	Cranes -- Safety code on mobile cranes	SASO GSO ISO/TR 19961
83	الرافعات – إثبات كفاءة الهياكل الفولاذية	Cranes – Proof of competence of steel structures	SASO ISO 20332
84	الرافعات – الصلابة – الرافعات الجسرية والقنطرية المتحركة	Cranes -- Stiffness -- Bridge and	SASO ISO 22986
85	الرافعات – الصيانة – الجزء ١: عام	Cranes -- Maintenance -- Part 1: General	SASO GSO ISO 23815-1
86	الرافعات – الرافعات ذات الذراع – المواصفات الدولية للتصميم والتصنيع والاستخدام ومتطلبات الصيانة والتوصيات	Cranes -- Jib cranes -- International Standards for design, manufacturing, use and maintenance requirements and recommendations	SASO GSO ISO/TR 25599
87	الرافعات – الرافعات البرجية – المواصفة القياسية الدولية للمتطلبات والتوصيات حول التصميم والتصنيع والاستخدام والصيانة	Cranes -- Tower cranes -- International Standards for design, manufacture, use and maintenance requirements and recommendations	SASO ISO/TR 27245
88	إطارات الرافعات النقالة والآلات المخصصة المماثلة	Tyres for mobile cranes and similar specialized machines	SASO ISO 10571
89	الحبال الحديدية للأغراض العامة – الحد الأدنى من المتطلبات	Steel wire ropes for general purposes - Minimum requirements	SASO ISO 2408
90	الرافعات – تدريب السائقين – الجزء الأول: العامة	Cranes -- Training of drivers -- Part 1: General	SASO GSO ISO 9926-1
91	الرافعات – تدريب المشغلين – الجزء ٣: الرافعات البرجية	Cranes – Training of operators – Part 3: Tower cranes	SASO ISO 9926-3

92	الشاحنات يدوية التشغيل – الأبعاد الرئيسية	Hand-operated stillage trucks - Principal dimensions	SASO ISO 938
93	الشاحنات الصناعية – أبعاد الرافعة – - قياس الإتصال	Industrial trucks - Dimensions of stillages - Connection gauge	SASO ISO 1756
94	الروافع الشوكية - ذات أذرع شوكية خطافية الشكل و حاملات اذرع الشوكة - ابعاد التثبيت	Fork-lift trucks -- Hook-on type fork arms and fork arm carriages -- Mounting dimensions	SASO GSO ISO 2328
95	الروافع الشوكية - أذرع الشوكة - الخواص الفنية - طرق الإختبار	Fork-lift trucks – Fork arms – Technical characteristics and testing	SASO ISO 2330
96	الرافعات الشوكيةِ -- أذرعة ذو حوامل شوكةِ -- المفردات	Fork lift trucks - Hook-on type fork arms - Vocabulary	SASO ISO 2331
97	الشاحنات الصناعية الآلية -- رموز مراقبة المشغل ورموز أخرى التي تظهر على شاشات المعدات	Powered industrial trucks - Symbols for operator controls and other displays	SASO ISO 3287
98	الشاحنات الصناعية -- متطلبات السلامة والتحقق منها -- الجزء ٢: الشاحنات ذاتية الدفع ذات الروافع المتعددة الأطوال	Industrial trucks — Safety requirements and verification — Part 2: Self-propelled variable-reach trucks	SASO GSO ISO 3691-2
99	الشاحنات الصناعية -- متطلبات السلامة والتحقق منها -- الجزء ٣: المتطلبات الإضافية للشاحنات المجهزة بموضع مرتفع للمشغل والشاحنات المصممة للتنقل بالأحمال المرفوعة	Industrial trucks — Safety requirements and verification — Part 3: Additional requirements for trucks with elevating operator position and trucks specifically designed to travel with elevated loads	SASO GSO ISO 3691-3
100	الشاحنات الصناعية – متطلبات الأمان والتحقق منه – الجزء ٧: المتطلبات الإقليمية لدول المجموعة الأوربية	Industrial trucks — Safety requirements and verification — Part 7: Regional requirements for countries within the European Community	SASO GSO ISO/TS 3691-7
101	الشاحنات الصناعية – متطلبات الأمان والتحقق منه – الجزء ٨: المتطلبات الإقليمية لدول المجموعة الأوربية	Industrial trucks — Safety requirements and verification — Part 8: Regional requirements for countries outside the European Community	SASO GSO ISO/TS 3691-8
102	الشاحنات الصناعية - الفحص وصيانة الشوكيةِ لشاحناتِ الرافعةِ الشوكية التي في الخدمة	Industrial trucks - Inspection and repair of fork arms in service on fork-lift trucks	SASO GSO ISO 5057

103	الشاحنات الصناعية – الدليل العلوى – المواصفات والاختبارات	Industrial trucks - Overhead guards – Specification and testing	SASO ISO 6055
104	الشاحنات والجرارات الصناعية - أداء المكابح ومتانة الأجزاء	Powered industrial trucks and tractors - Brake performance and component strength	SASO ISO GSO 6292
105	الشاحنات ذات الرافعات الشوكية – ملحقات ذراع الشوكة وأذرع الشوكة التلسكوبية – الخصائص التقنية ومتطلبات القوة	Fork-lift trucks - Fork-arm extensions and telescopic fork arms - Technical characteristics and strength requirements	SASO ISO 13284
106	شاحنات رافعة الشوكية التحميل الجانبيةِ المفردةِ – الجزء ٢: إختبار الثبات الإضافيُ للشاحناتِ التي تحمل حاوياتِ شحنِ - امتار طول وما فوقها	Single side loading fork-lift trucks – Part 2: Additional stability tests for trucks handling freight containers of 6 m length and above	SASO ISO 13563-2
107	الشاحنات الصناعية التي تعمل بالطاقة -- أساليب الاختبار الخاصة بالتحقق من مدى الرؤية -- الجزء ١: الشاحنات المزودة بوضعي جلوس ووقوف المشغل والشاحنات متغيرة الارتفاع التي تصل سعتها إلى وتشمل ١٠ أطنان	Powered industrial trucks — Test methods for verification of visibility — Part 1: Sit-on and stand-on operator trucks and variable-reach trucks up to and including 10 t capacity	SASO GSO ISO 13564-1
108	الشاحنات الصناعية الآلية -- علامات الأمان وعلامات تصويرية للخطر -- مبادئ عامّة	Powered industrial trucks - Safety signs and hazard pictorials - General principles	SASO ISO 15870
109	الشاحنات الصناعية – مواصفات أضواءِ المؤشرِ لمعالجة الحاويةِ وعملياتِ ذراعِ الماسكة	Industrial trucks – Specifications for indicator lights for container handling and grappler arm operations	SASO ISO 15871
110	الشاحنات الصناعية – المتطلبات الكهربائية	Industrial trucks - Electrical requirements	SASO ISO 20898
111	بناء وتصميم دواسات الشاحنات الصناعية الذاتية الدفع التي تقع أسفل مقعد السائق – قواعد بنائها وتصميمها	Construction and layout of pedals of self-propelled sit-down rider-controlled industrial trucks — Rules for the construction and layout of pedals	SASO GSO ISO 21281
112	الشاحنات الصناعية -- التحقق من الاستقرار -- الجزء ١: مبادئ عامة	Industrial trucks — Verification of stability — Part 1: General	SASO GSO ISO 22915-1
113	الشاحنات الصناعية – التحقق من الثبات – الجزء ٢: الشاحنات المتوازنة مع السارية	Industrial trucks - Verification of stability – Part 2: Counterbalanced trucks with mast	SASO ISO 22915-2

114	الشاحنات الصناعية – التحقق من الثبات – الجزء ٣: الوصول وصعود الشاحنات	Industrial trucks - Verification of stability – Part 3: Reach and straddle trucks	SASO ISO 22915-3
115	الشاحنات الصناعية -- التحقق من درجة الثبات -- الجزء ٤: المرصصات المزودة بمنصات والمرصصات المزدوجة وشاحنات استلام الطلبات المزودة بوضع مشغل بارتفاع رفع حتى ١٢٠٠ ملم مع شمول القيمة	Industrial trucks — Verification of stability — Part 4: Pallet stackers, double stackers and order-picking trucks with operator position elevating up to and including 1 200 mm lift height	SASO GSO ISO 22915-4
116	الشاحنات الصناعية -- التحقق من درجة الثبات -- الجزء ٥: الشاحنات الحمولة أحادية الجانب	Industrial trucks — Verification of stability — Part 5: Single-side-loading trucks	SASO GSO ISO 22915-5
117	الشاحنات الصناعية -- التحقق من درجة الثبات -- الجزء ٧: الشاحنات أحادية الاتجاه وثنائية الاتجاه	Industrial trucks — Verification of stability — Part 7: Bidirectional and multidirectional trucks	SASO GSO ISO 22915-7
118	الشاحنات الصناعية -- التحقق من درجة الثبات -- الجزء ٨: الاختبارات الإضافية للتحقق من درجة الثبات للشاحنات التي تعمل في الوضع الخاص للتكديس بساري مائل إلى الأمام وشحنة مرفوعة	Industrial trucks — Verification of stability — Part 8: Additional stability test for trucks operating in the special condition of stacking with mast tilted forward and load elevated	SASO GSO ISO 22915-8
119	الشاحنات الصناعية -- التحقق من درجة الثبات -- الجزء ٩: الشاحنات المتوازنة المزودة بساري لمناولة حاويات الشحن طول ٦ متر (٢٠ قدم) وأكثر من ذلك	Industrial trucks — Verification of stability — Part 9: Counterbalanced trucks with mast handling freight containers of 6 m (20 ft) length and longer	SASO GSO ISO 22915-9
120	الشاحنات الصناعية - التحقق من الاستقرار - الجزء ١٠: اختبار الاستقرار الاضافي للشاحنات الصناعية التي تعمل في ظروف تكويم خاصة وبها جهاز لعرض مقدار الاحمال	Industrial trucks - Verification of stability – Part 10: Additional stability test for trucks operating in the special condition of stacking with load laterally displaced by powered devices	SASO ISO 22915-10
121	الشاحنات الصناعية -- التحقق من درجة الثبات -- الجزء ١١: الشاحنات متغيرة الارتفاع	Industrial trucks — Verification of stability — Part 11: Industrial variable-reach trucks	SASO GSO ISO 22915-11

122	الشاحنات الصناعية -- التحقق من درجة الثبات -- الجزء ١٢: الشاحنات متغيرة الارتفاع لمناولة حاويات الشحن بطول ٦ م (٢٠ قدم) وأطول	Industrial trucks — Verification of stability — Part 12: Industrial variable-reach trucks handling freight containers of 6 m (20 ft) length and longer	SASO GSO ISO 22915-12
123	الشاحنات الصناعية -- التحقق من درجة الثبات -- الجزء ١٥: الشاحنات المتوازنة المزودة بقيادة مفصلية	Industrial trucks — Verification of stability — Part 15: Counterbalanced trucks with articulated steering	SASO GSO ISO 22915-15
124	الشاحنات الصناعية -- التحقق من درجة الثبات -- الجزء ١٦: شاحنات الدفع البشري	Industrial trucks — Verification of stability — Part 16: Pedestrian-propelled trucks	SASO GSO ISO 22915-16
125	الشاحنات الصناعية -- التحقق من درجة الثبات -- الجزء ٢٠: الاختبارات الإضافية للتحقق من درجة الثبات للشاحنات التي تعمل في الظروف الخاصة لحمل الإزاحة والإزاحة عن طريق الاستخدام	Industrial trucks - Verification of stability — Part 20: Additional stability test for trucks operating in the special condition of offset load, offset by utilization	SASO GSO ISO 22915-20
126	الشاحنات الصناعية -- التحقق من درجة الثبات -- الجزء ٢١: شاحنات الرفع التي يبلغ ارتفاع مكان مشغلها أكثر من ١٢٠٠ ملم	Industrial trucks - Verification of stability — Part 21: Order-picking trucks with operator position elevating above 1200 mm	SASO GSO ISO 22915-21
127	الشاحنات الصناعية -- التحقق من درجة الثبات -- الجزء ٢٢: شاحنات الرص الجانبية والأمامية بوضع مشغل الرفع أو بدونه	Industrial trucks — Verification of stability — Part 22: Lateral- and front-stacking trucks with and without elevating operator position	SASO GSO ISO 22915-22
128	الشاحنات الصناعية – المتطلبات الإضافية للوظائفِ المؤتمنة على الشاحنات	Industrial trucks - Additional requirements for automated functions on trucks	SASO ISO 24134
129	الشاحنات الصناعية – المواصفاتَ - طرق الاختبار لأنظمةِ ضبطِ المشغلِ – الجزء ١: أحزمة المقعد من نوع معين	Industrial trucks – Specifications and test methods for operator restraint systems – Part 1: Lap-type seat belts	SASO ISO 24135-1
130	رافعات المركبات	Vehicle lifts	SASO GSO EN 1493
131	الرافعات الخلفية - رافعات منصة للتركيب على المركبات ذات العجلات - متطلبات السلامة - الجزء ١: رافعات خلفية للسلع	Tail lifts - Platform lifts for mounting on wheeled vehicles – Safety requirements - Part 1: Tail lifts for goods	SASO GSO EN 1756-1

132	منصات هيدروليكية (HPs) لخدمات الإطفاء والإنقاذ - متطلبات السلامة والاختبار	Hydraulic platforms (HPs) for fire-fighting and rescue services - Safety requirements and testing	SASO GSO EN 1777
133	معدات الدعم الأرضي للطائرات – المتطلبات الخاصة – الجزء ٨: سلالم الصيانة ومنصاتها	Aircraft ground support equipment - Specific requirements - Part 8: Maintenance or service stairs and platforms	SASO GSO EN 12312-8
134	معدات الدعم الأرضي للطائرات – المتطلبات الخاصة – الجزء ١٠: ناقلات الحاويات والمنصات النقالة	Aircraft ground support equipment - Specific requirements - Part 10: Container/Pallet transfer transporters	SASO GSO EN 12312-10
135	معدات الدعم الأرضي للطائرات - المتطلبات الخاصة – الجزء ١٩: رافعات الطائرات والرافعات المحورية ودعامات ذات الذيل الهيدروليكي	Aircraft ground support equipment - Specific requirements - Part 19: Aircraft jacks, axle jacks and hydraulic tail stanchions	SASO GSO EN 12312-19
136	التشغيل الآلي المتنقل للتعليق والترفيف، والحوامل الدوارة ورافعات التخزين – متطلبات السلامة	Power-operated mobile racking and shelving, carousels and storage lifts - Safety requirements	SASO GSO EN 15095
137	منصات العمل الرافعة والمتحركة - حسابات التصميم - معايير الاستقرار - التشييد - السلامة - الفحوصات والاختبارات	Mobile elevating work platforms - Design calculations - Stability criteria - Construction - Safety - Examinations and tests	SASO GSO EN 280
138	الرافعات المتنقلة أو المتحركة ومعدات الرفع المرتبطة بها	Mobile or movable jacks and associated lifting equipment	SASO GSO EN 1494
139	شاحنات التضاريس الوعرة -- متطلبات السلامة والتحقق -- الجزء ١: شاحنات الوصول المتغير	Rough-Terrain Trucks -- Safety Requirements And Verification -- Part 1: Variable-Reach Trucks	SASO GSO ISO 10896-1
140	شاحنات التضاريس الوعرة -- متطلبات السلامة والتحقق منها -- الجزء ٢: الشاحنات الدوارة	Rough-Terrain Trucks — Safety Requirements And Verification — Part 2: Slewing Trucks	SASO GSO ISO 10896-2

141	شاحنات التضاريس الوعرة -- متطلبات السلامة والتحقق منها -- الجزء ٤: المتطلبات الإضافية للشاحنات ذات الروافع المتعددة الأطوال المخصصة لمناولة الأحمال المعلقة بشكل حر	Rough-Terrain Trucks — Safety Requirements And Verification — Part 4: Additional Requirements For Variable-Reach Trucks Handling Freely Suspended Loads	SASO GSO ISO 10896-4
142	شاحنات التضاريس الوعرة -- متطلبات السلامة والتحقق منها -- الجزء ٥: السطح البيني بين شاحنات التضاريس الوعرة ومنصة العمال المدمجة	Rough-Terrain Trucks — Safety Requirements And Verification — Part 5: Interface Between Rough-Terrain Truck And Integrated Personnel Work Platform	SASO GSO ISO 10896-5
143	شاحنات التضاريس الوعرة -- متطلبات السلامة والتحقق منها -- الجزء ٧: نظم عزم الحمل الطولي	Rough-Terrain Trucks — Safety Requirements And Verification — Part 7: Longitudinal Load Moment Systems	SASO GSO ISO 10896-7
144	السلامة للشاحنات الصناعية – المتطلبات الإضافية للوظائف الآلية على الشاحنات	Safety of industrial trucks - Additional requirements for automated functions on trucks	SASO GSO EN 1526
145	الرافعات – معدات رفع الأشخاص – الجزء ٢: محطات التحكم في الصعود	Cranes - Equipment For The Lifting Of Persons - Part 2: Elevating Control Stations	SASO GSO EN 14502-2
146	الرافعات – أجهزة الرفع والأوناش الآلية – الجزء ١: الأوناش الآلية	Cranes - Power driven winches and hoists - Part 1: Power driven winches	SASO GSO EN 14492-1
147	الرافعات – أجهزة الرفع والأوناش الآلية – الجزء ٢: أجهزة الرفع الآلية	Cranes - Power Driven Winches And Hoists - Part 2: Power Driven Hoists	SASO GSO EN 14492-2
148	سلاسل الربط القصيرة المستخدمة في أغراض الرفع – السلامة – الجزء ٢: سلسلة التفاوت المتوسط لسلسلة المعاليق – الدرجة ٨	Short Link Chain For Lifting Purposes - Safety - Part 2: Medium Tolerance Chain For Chain Slings - Grade 8	SASO GSO EN 818-2
149	سلاسل الربط القصيرة المستخدمة في أغراض الرفع – السلامة – الجزء ٣: سلسلة التفاوت المتوسط لسلسلة المعاليق – الدرجة ٤	Short Link Chain For Lifting Purposes - Safety - Part 3: Medium Tolerance Chain For Chain Slings - Grade 4	SASO GSO EN 818-3
150	سلاسل الربط القصيرة المستخدمة في أغراض الرفع – السلامة – الجزء ٤: سلسلة المعاليق – الدرجة ٨	Short Link Chain For Lifting Purposes - Safety - Part 4: Chain Slings - Grade 8	SASO GSO EN 818-4

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151	سلاسل الربط القصيرة المستخدمة في أغراض الرفع – السلامة – الجزء ٥: سلسلة المعاليق – الدرجة ٤	Short Link Chain For Lifting Purposes - Safety - Part 5: Chain Slings - Grade 4	SASO GSO EN 818-5
152	سلاسل الربط القصيرة المستخدمة في أغراض الرفع – السلامة – الجزء ٦: سلسلة المعاليق – المواصفات الفنية لمعلومات الاستخدام والصيانة المطلوب تقديمها من جهة التصنيع	Short Link Chain For Lifting Purposes - Safety - Part 6: Chain Slings - Specification For Information For Use And Maintenance To Be Provided By The Manufacturer	SASO GSO EN 818-6
153	سلاسل الربط القصيرة المستخدمة في أغراض الرفع – السلامة – الجزء ٧: سلسلة الرفع ذات التفاوت الدقيق، الدرجة T (الأنواع T ، وDAT ، و DT)	Short Link Chain For Lifting Purposes - Safety - Part 7: Fine Tolerance Hoist Chain, Grade T (Types T, DAT And DT)	SASO GSO EN 818-7
154	المعاليق النسيجية – السلامة – الجزء ١: المعاليق النسيجية الشريطية المسطحة المصنوعة من الألياف الصناعية للأغراض العامة	Textile Slings - Safety - Part 1: Flat Woven Webbing Slings, Made Of Man-Made Fibres, For General Purpose Use	SASO GSO EN 1492-1
155	المعاليق النسيجية – السلامة – الجزء ٢: المعاليق المستديرة المصنوعة من الألياف الصناعية للأغراض العامة	Textile Slings - Safety - Part 2: Roundslings, Made Of Man-Made Fibres, For General Purpose Use	SASO GSO EN 1492-2
156	المعاليق النسيجية – السلامة – الجزء ٤: معاليق الرفع المستخدمة في الأغراض العامة، المصنوعة من أحبال الألياف الطبيعية والصناعية	Textile Slings - Safety - Part 4: Lifting Slings For General Service Made From Natural And Man-Made Fibre Ropes	SASO GSO EN 1492-4
157	منصات الرفع – منصات أعمال تسلق الصاري	Lifting Platforms - Mast Climbing Work Platforms	SASO GSO EN 1495
158	متطلبات السلامة لطاولات الرفع الجزء الأ ول: طاولات الرفع التى تخدم حتى قاعدتين ثابتتين	Safety Requirements For Lifting Tables- Part 1: Lifting Tables Serving Up To Two Fixed Landings	SASO GSO EN 1570-1
159	مكونات المعاليق – السلامة – الجزء ١: المكونات المصنوعة من الصلب المطروق، الدرجة ٨	Components For Slings - Safety - Part 1: Forged Steel Components, Grade 8	SASO GSO EN 1677-1
160	مكونات المعاليق – السلامة – الجزء ٢: خطافات الرفع المصنوعة من الصلب المطروق المزودة بمزلاج، الدرجة٨	Components For Slings - Safety - Part 2: Forged Steel Lifting Hooks With Latch, Grade 8	SASO GSO EN 1677-2
161	مكونات المعاليق – السلامة – الجزء ٣: خطافات الرفع الذاتية الغلق المصنوعة من الصلب المطروق – الدرجة ٨	Components For Slings - Safety - Part 3: Forged Steel Self-Locking Hooks - Grade 8	SASO GSO EN 1677-3

162	مكونات المعاليق – السلامة – الجزء ٤: الروابط، الدرجة ٨	Components For Slings - Safety - Part 4: Links, Grade 8	SASO GSO EN 1677-4
163	مكونات المعاليق – السلامة – الجزء ٥: خطافات الرفع المصنوعة من الصلب المطروق المزودة بمزلاج– الدرجة ٤	Components For Slings - Safety - Part 5: Forged Steel Lifting Hooks With Latch - Grade 4	SASO GSO EN 1677-5
164	مكونات المعاليق – السلامة – الجزء ٦: الأربطة– الدرجة ٤	Components For Slings - Safety - Part 6: Links - Grade 4	SASO GSO EN 1677-6
165	براغي العين لأغراض الرفع العامة	Eyebolts for general lifting purposes	SASO ISO 3266
166	الأحبال المصنوعة من السلك الصلب – السلامة – الجزء ١: المتطلبات العامة	Steel Wire Ropes - Safety - Part 1: General Requirements	SASO GSO EN 12385-1
167	الأحبال المصنوعة من السلك الصلب – السلامة – الجزء ٣: معلومات الاستخدام والصيانة	Steel Wire Ropes - Safety - Part 3: Information For Use And Maintenance	SASO GSO EN 12385-3
168	الأحبال المصنوعة من السلك الصلب – السلامة – الجزء ٤: الأحبال المجدولة المستخدمة في تطبيقات الرفع العامة	Steel Wire Ropes - Safety - Part 4: Stranded Ropes For General Lifting Applications	SASO GSO EN 12385-4
169	الرافعات – السلامة – ملحقات رفع الحمل غير المثبتة	Cranes - Safety - Non-fixed load lifting attachments	SASO GSO EN 13155
170	معاليق الحبال المصنوعة من السلك الصلب – السلامة – الجزء ١: المعاليق المستخدمة لخدمة الرفع العامة	Steel Wire Rope Slings - Safety - Part 1: Slings For General Lifting Service	SASO GSO EN 13414-1
171	معاليق الحبال المصنوعة من السلك الصلب – السلامة – الجزء ٢: المواصفات الفنية لمعلومات الاستخدام والصيانة التي يجب على جهة التصنيع تقديمها	Steel Wire Rope Slings - Safety - Part 2: Specification For Information For Use And Maintenance To Be Provided By The Manufacturer	SASO GSO EN 13414-2
172	المعاليق الحبلية المصنوعة من السلك الصلب – السلامة – الجزء ٣: المعاليق المزودة بعروات معدنية وكابلات مجدولة	Steel Wire Rope Slings - Safety - Part 3: Grommets And Cable-Laid Slings	SASO GSO EN 13414-3

Note: The list of standards mentioned in this Annex is subject to review, and suppliers are responsible for ensuring that they use the latest standards through SASO's website.

B) List of Products and Customs Coding

No.	Product	Customs Coding
1	Electric motor driven pulley tackle and hoists, Horizontal-mounted cranes (Winches), Vertical-mounted cranes (capstan)	8425
2	Overhead travelling cranes on fixed support, Mobile lifting frames on tyres and straddle carriers, Tower cranes, Portal or pedestal jib cranes, On tyres, Designed for mounting on road vehicles	8426
3	Fork-lift trucks, trucks fitted with lifting or handling equipment	8427
4	Other lifting, handling, loading or unloading machinery, Bucket Elevators, Pneumatic elevators and conveyors, Surfaces, cylinders, boxes, platforms	8428

Note: The products and customs tariffs (HS Codes) found in Saber electronic platform are considered the updated and approved version.

Annex (2)

General Basic Requirements for Health and Safety in Machinery

1 Basic Health and Safety Requirements

1/1 Integration Principles of Safety

A) Machinery shall be designed and manufactured in such a way that they are installed and prepared for use, operation, modification and maintenance without exposing persons to hazards, when performing such operations under the conditions of anticipated use, taking into account the occurrence of any misuse reasonably foreseen.

The purpose of these precautions is to eliminate any risks during the operating life of the machinery, including the transportation, assembly, disassembly and disposal stages.

B) The supplier - when choosing the most appropriate method - shall work on applying the principles below, in the following order:

- Preventing or reducing the risks as much as possible (not tampering with the design or installation of the machinery).
- Taking the necessary precautions regarding risks that cannot be eliminated.
- Educating users about the risks that are still exist (despite taking preventive precautions) resulting from any deficiencies in the approved protection measures, clarifying the quality of training required, as well as defining requirements for providing personal protection from equipment.

C) When designing and installing machinery and when formulating instructions, the supplier shall be careful in the intended use of them, as well as in any misuse that can be reasonably expected.

D) The machinery shall be designed and manufactured in a way that prevents unnatural use if such use would result in a hazard, whenever appropriate, and instructions shall be directed so that the user’s attention can be given to the methods of using the machinery.

E) The machinery shall be designed and manufactured taking into account the constraints encountered by the operator as a result of the reasonable or expected use of personal protective equipment (PPE).

F) Machinery shall be provided with all necessary equipment and fittings to enable them to be modified, maintained and used safely.

1/2 Materials and Products

The materials or products used in the manufacture of machinery or manufactured during the use of the machinery shall not endanger the health and safety of persons,

especially when using liquids, and care shall be taken - when manufacturing and installing the machinery - to avoid the risks of exposure due to the packing, use, repair or disposal of their waste.

1/3 Lighting

- The machinery shall be provided with integrated lighting suitable for the respective operations, as their absence may lead to exposure to hazards despite the presence of natural lighting surrounding the machinery.
- The machinery shall be designed and installed in such a way that they do not cause eye inconvenience resulting from turning on and off the lighting, while making sure that there are no dangerous side effects on moving parts due to poor lighting.
- As for interior parts that need frequent inspection or adjustment, or maintenance, appropriate lighting shall be provided.

1/4 Design of machinery to facilitate handling

1/4/1 The machinery or any parts of their components shall have the following characteristics:

A) The ability to be handled and transported safely.

B) They shall be packaged and designed in a manner that they can be stored safely without damaging their components.

1/4/2 When transporting the machinery or any part of their components, there shall be no possibility of any sudden movement or risks due to instability, as long as dealing with the machinery or any part of their components is in accordance with the instructions. As for the cases in which the weight, size, shape or various components of the machinery prevent them from being moved manually, the machinery or any parts of their components shall meet the following requirements:

A) To be equipped with lifting fittings.

B) To be designed in a manner that allows them to be fitted with these fittings.

C) To be prepared/equipped to mount a lifting device so that they can be lifted easily.

1/4/3 When transporting machinery or any of their parts manually, the following shall be taken into consideration:

A) To be easily movable.

B) To be equipped for lifting and moving safely.

Special arrangements shall also be made to handle potentially dangerous tools or machine parts, even if they are lightweight.

1/5 Working Environment

The physical stress facing the operator shall - under the specified conditions of use - be minimized as possible, taking into account the provision of comfortable environmental conditions such as:

A) Allowing the operator to change the dimensions, strength and durability of the machine.

B) Providing enough space for easy movement of the operator.

C) Not to exceed the specified rate of work for the machinery.

D) Avoiding the increase of the operator's control operations of the machine, especially those requiring prolonged focus.

E) Modifying the machine user interface in line with the nature of the operators.

1/6 Operating Positions

If the purpose of these machinery is to be used in an environment that represents a source of risk to the health and safety of the operator, or if the machinery themselves represent a source of hazard, adequate means shall be provided to ensure good working conditions for the operator against any foreseeable risks. Moreover, the operating position shall be equipped with an appropriate cabin designed or equipped to fulfill the requirements mentioned in Clause (1/5) above, whenever appropriate. It is also necessary for the exit point of the cabin to enable quickly evacuation, and moreover, an emergency exit shall be provided in a direction other than the usual exit direction.

1/7 Seats

Work positions (places) form an integral part of the machine, and these positions shall be designed in such a way that the seat is attached to the machine, whenever the working conditions permit.

- The seat shall give the operator a stable and comfortable position, and the seat shall be convenient and close to the controllers, in order to control the work easily.

- If the machinery are subject to vibration, the seat shall be designed and installed in a way that reduces the vibration transmitted to the operator reasonably to the lowest possible degree, and the seat shall be designed to withstand all operational stresses that the operator may be exposed to. When there is no floor under the operator's feet, a footrest covered with anti-slip material shall be provided.

2 Control Systems

2/1 Control Devices

2/1/1 Controllers shall be:

A) Clearly visible and recognizable, using pictograms whenever possible.

B) Placed in locations that allow them to be operated safely without hesitation or wasting time, and without the possibility of confusion.

C) Designed in a way that makes its movement consistent with its function.

D) Placed outside the area of danger, except in cases of necessity for some controllers such as the presence of the start or stop switch, in case of emergency.

E) Placed in safe locations so as not to pose additional risks.

F) Protected and designed for use in situations of hazard and emergency, so that they can be operated with a specified procedure.

G) Manufactured in such a way as to withstand the expected operational forces, and special attention shall be paid to emergency stop devices that may also be subject to significant operational forces.

2/1/2 In cases where controllers are designed and installed to implement multiple procedures, especially those cases in which there is no communication between one person and another, the procedure to be followed shall be clearly written.

2/1/3 Controllers shall be arranged in such a way that their coordination, mode of transmission and resistance to operation comply with the procedure to be performed, taking into account environmental conditions.

2/1/4 The machinery shall be provided with the indicators required for safe operation, and the operator shall be able to read them from the control position.

2/1/5 The operator shall ensure that no person is present in the hazard zone in all control locations, in addition to the necessity to design the control system in a way that prevents it from starting when there is no person within the hazard area.

In addition, when it is not possible to implement any of these measures, the control system shall give an audio or visual alarm, or both, before starting up the machinery, with adequate time being given for the persons exposed to the hazard in order to leave the danger area or prevent the operation of the machinery.

2/1/6 If necessary, means shall be provided to ensure that the machinery are only controlled from the control positions, which are located in one place or several pre-defined places, and when there is more than one control position, the control system shall be designed in such a way that the use of one position precludes the use of other positions, with the exception of the controls in cases of stop or emergency stop (due to an emergency).

2/1/7 When the machine can be operated by two or more operating positions, each position shall be equipped with all required controllers, without the operators hindering each other's work or endangering others.

2/2 Start Up

The operation of the machinery shall be started up by means of intended operation (only at the decision and will of the operator), and that is through the controller equipped for this purpose.

This same condition applies in the following cases:

A) Restarting the machinery after stopping for whatever reason.

B) A major change in operating conditions.

In spite of this, machinery can be restarted or changes in operating conditions may be made with the intended operation of another device, other than the controller specially designed for this purpose, provided that this does not lead to the occurrence of a hazardous situation.

For machinery operating in automatic mode, it may be possible to start or restart the machinery after they have been stopped or to make a change in operating conditions without human intervention, provided that this does not lead to any hazardous situation.

When the machinery contain many controllers specialized in starting operation, and hence the possibility of exposing some operators to hazard, additional devices shall be installed to eliminate these risks, and if safety requirements require starting or stopping the operation in a specified sequence, there shall be devices ensuring that these processes are applied in the correct order.

2/3 Shutdown

2/3/1 Normal Shutdown

A) The machinery shall be equipped with a controller that enables them to move to a full stop mode safely.

B) Each workplace shall be equipped with a controller to stop some or all of the machinery functions, based on the risks involved, until the machinery are safely operated.

C) Control devices shall have priority for the operations associated with stopping the operation of machinery over starting up.

D) The interruption of the power supply to the operators concerned shall be automatic as soon as the machinery or their hazardous functions cease to function.

E) The throttle controller shall be used - for operational reasons - without cutting the power supply to the actuators, and the shutdown case shall be monitored and maintained.

2/3/2 Stopping in the case of emergency

A) The machinery shall be equipped with one or more emergency stopping devices, in order to avoid actual or imminent hazard, Machinery in which the emergency stopping device does not reduce the size of the hazard, either because it does not reduce the downtime, or because it does not activate the necessary precautions to deal with the risks.

B) The stopping device shall be:

1) Clearly visible, easy to be found, and quickly accessible.

2) Able to stop the dangerous operation as quickly as possible, without causing additional risks.

3) Able to trigger or allow some preventive vibration, whenever necessary.

C) Once the emergency stopping device is activated after receiving the stop command, this command shall be supported by interlocking the emergency stop device so that this interlocking is specifically bypassed.

D) The machinery must not be restarted automatically after an emergency stop, except through correct operation only, given by a command from the operator.

E) The emergency stopping function shall be available and operating at all times, regardless of the operation mode.

F) Emergency stopping devices shall support other protection measures, without being a substitute for them.

2/4 Assembly of Machinery

When machinery or parts thereof are designed to work together, they shall be designed in a way that includes stop-start controls, including emergency controllers, and they shall have the ability to stop the operation of machinery and all related equipment, especially if continued operation is dangerous.

2/5 Choosing the Control or Operation Modes

2/5/1 The specified control or operation mode shall cancel all other control or operation modes, except for the emergency stop.

2/5/2 If the machinery are designed and installed in a way that allows them to be used in variable conditions of control or operation, which requires the activation of preventive measures or different operating procedures, these machinery shall be equipped with a position limiter that can be locked in all positions, and all position limiters shall be clear and compatible with a single operation or control mode.

2/5/3 The limiter can be replaced by another limiting method, which restricts the use of certain functions in machinery for certain groups of operators.

2/5/4 The machinery - in some operating cases - shall be qualified to operate even if the protective device is removed or disabled, and the operating limiter or control mode shall be able to do the following simultaneously:

A) Disable all other control or operation modes.

B) The possibility of operating hazardous functions only by controllers that require sustainable measures.

C) The possibility of operating hazardous functions only in situations of low hazard, while preventing the severe consequences of the risks.

D) Preventing the operation of any dangerous functions through intended or unintended operating procedures by the sensors of the machinery.

2/5/5 the above four conditions are not met at the same time, the limiter of control or operation mode shall activate other protective measures designed to ensure a safe range of intervention, and in addition, the operator shall be able to control the operation of the parts he is working on from the adjustment point.

2/6 Power Supply Failure

2/6/1 The power failure or its reconnection after an outage, or the occurrence of fluctuation in the electrical current, shall not lead to the occurrence of dangerous situations.

2/6/2 The following requirements must also be taken into consideration:

A) Prohibition of sudden starting up of machinery.

B) Not to change the properties of the machinery in a random way that leads to dangerous situations (accidents) or situations that constitute a hazard.

C) Prohibition to prevent stopping machinery when a stop command is given.

D) Ensure that the moving parts of the machinery do not fall or be ejected.

E) Not hindering the automatic or manual stopping of the moving parts of any kind.

F) Protection devices remain fully functional or capable of giving a stop command.

3 Prevention of Mechanical Hazards

3/1 Risk of Losing Stability

The machinery and their components and installations shall be sufficiently stable to avoid the risk of capsizing, falling or accidental (unintended) movement during transportation, assembly, disassembly, or any other work related to the operation of the machinery.

If the shape or correct installation of the machinery does not provide sufficient stability, appropriate means of fixation shall be provided and indicated in the instruction manual.

3/2 Risk of Dismantling During Operation

3/2/1 The parts of machinery and their various connections shall be equipped in a way that allows them to withstand the pressures imposed upon them when they are used.

3/2/2 The durability of the materials used shall be commensurate with the nature of the expected work environment, especially when signs of wear, aging, corrosion or friction appear.

3/2/3 The instructions shall indicate the type and frequency of inspections and maintenance required for safety purposes, and the instructions shall indicate - when necessary - the parts subject to wear and the standards limiting their replacement.

3/2/4 In cases where there is a risk of some parts of the machine being separated or disassembled despite taking safety measures, the concerned parts shall be fixed, placed or protected in a way that allows the shrapnel to be contained to avoid dangerous situations.

3/2/5 Both rigid and flexible pipes that transport liquids - especially those are under high pressure - shall be able to withstand potential internal and external stresses, and they shall be protected and secured by force to ensure that there are no risks due to use.

3/2/6 When processing materials are fed to the machine automatically, the conditions below shall be met, in order to avoid exposing people to hazard:

A) When there is a contact between the work piece and the machine, the machine shall be in its normal condition and operable.

B) When starting or stopping the machine (intentionally or by mistake), there shall be consistency between the feeding motion and the movement of the machine.

3/3 Risks due to Falling or Ejected Objects

Precautions shall be taken to prevent risks resulting from falling or flying objects.

3/3/1 Risks Related to Surfaces, Edges or Angles

The parts of the device - which can be accessed - shall not have sharp edges or corners, or rough surfaces, which may cause injuries.

3/3/2 Risks Related to Combined Machinery

The machinery shall be designed and installed in a way that enables the use of each element separately, without the need to use other elements, which may pose a danger to their users, when the machinery are used for the purpose of carrying out various operations that require the removal of the existing work piece, between a process and another manually, which requires the ability to start up or stop any element of the unprotected elements separately.

3/3/3 Risks Related to Variations in Operation Conditions

When machinery perform operations in various conditions, they shall be designed, manufactured, configured, and installed in such a way through which these conditions can be created and modified safely and reliably.

3/3/4 Risks Related to Moving Parts

The moving parts of the machine shall be designed and installed in such a way as to prevent the risk of contact that could lead to accidents, or be equipped with protective devices.

All necessary steps shall be taken to prevent the involuntary failure of the moving parts of the machine participating in the work, and when there is a possibility of failure - despite the necessary precautions being taken - specific (appropriate) protection

devices and tools shall be provided if possible, in order to prevent the equipment from failing safely.

The instructions and markings affixed to the machinery shall explain what appropriate protective devices are and how to use them.

3/3/5 Type of Protection Against Risks Caused by Moving Parts

Protectors or protective devices which protect against risks arising from operating moving parts shall be selected according to the type of risks, and the instructions below shall be used to help in the choice.

Protective devices designed to protect personnel against risks arising from the moving parts of the working machine shall have the following:

1) Either they are in accordance with the fixed protectors mentioned in clause 4/2/1 below;

2) Or they are in accordance with the (closed) moving protectors mentioned in clause 4/2/2 below.

However, moving (closed) protectors shall be used when repeated entry is assumed.

3/3/6 Moving Parts Involved in the Process

Protectors or protective devices - designed to protect individuals against hazards resulting from moving parts connected to the process - shall be one of the following options:

A) Either they are in accordance with the fixed protectors mentioned in clause 4/2/1 below;

B) in accordance with the movable interlocking protectors mentioned in clause 4/2/2 below;

C) in accordance with the operator protection devices mentioned in clause 4/2/2 below;

D) Or a combination of the options above.

In the event that it is not possible to fully access some of the moving parts connected to the operation due to the need for operator intervention in the operations, those parts shall be provided with the following:

A) Locked fixed or moving protective devices that prevent access to moving parts connected to operation that were not used during work.

B) Fenders that are adjustable as mentioned in Clause 4/2/2 below, in order to prevent access to the moving parts connected to the moving operation when it is wanted to access them.

3/3/7 Risks of Uncontrolled Movements

When stopping any part of the machine, the machine shall stop completely, and this shall not pose any hazard.

4 Properties Required for Protective and Preventive Devices

4/1 General Requirements

4/1/1 The protectors and protective devices shall have the following characteristics:

A) Solid structure.

B) Securely installed.

C) Do not lead to any additional risks.

D) Not to be ignored or not to operate easily.

E) To be placed at a sufficient distance from the hazard area.

F) Not hindering production processes.

G) Enable basic work in connection with installing or replacing tools and carrying out maintenance work by restricting access exclusively to the area of operations execution without the need to remove the device or disable the protection device, whenever possible.

4/1/2 The protective devices shall work - whenever possible - on protecting against flying or falling objects or materials, as well as protection from emissions resulting from operating machinery.

4/2 Requirements for Special Protective Devices

4/2/1 Fixed Protective Devices

A) It shall be ensured that fixed protective devices are installed with systems that can be opened or removed with special tools only.

B) Fixing systems shall remain connected to the protective devices or machinery when removing the protective devices whenever possible.

C) Whenever possible, the protective devices shall not be stabilized in their place without their fixation devices.

4/2/2 Interlocked Movable Barriers

A) Interlocked movable barriers shall:

1) When opened, remain connected to the machinery whenever possible.

2) Be designed and installed in a way that can only be modified by an approved procedure.

3) The interlocked movable protective devices shall be connected to an interlocking device that ensures:

- Preventing dangerous machine functions from starting until protective devices are turned off.
- Issuing a stop order when the protective devices are not closed.

B) Whenever the operator is able to reach the hazard area before the hazardous functions are stopped, the movable protectors shall be connected to the protective device locking apparatus, in addition to the interlocking device that:

- Prevents the start of dangerous machinery functions until the protective device is closed and sealed.
- Maintains the protective device closed until the risk of injury resulting from the dangerous functions of the machine is eliminated.

C) Moving protective devices shall be designed in such a way as to prevent the starting or stopping of the machine's functions when one of its components is lost or damaged.

4/2/3 Adjustable Protective Devices

Adjustable protective devices that restrict access to those positions of moving parts necessary for work shall be:

A) Manually or automatically adjustable according to the type of work.

B) Quickly adjustable without using tools.

4/2/4 Special Requirements for Protective Devices

A) The protective devices shall be designed and integrated with the control system in a manner that allows the following:

1) Moving parts cannot be operated while the operator can access them.

2) People do not have access to the moving parts while those parts are still moving.

3) Preventing the starting or stopping of dangerous functions of the machine when one of its components is lost or broken.

B) The adjustable protective devices shall be modified by a specified procedure.

5 Risks Arising from Other Accidents

5/1 Power Supply

A) The machine connected to the electrical current shall be designed, installed and equipped in such a way as to prevent the occurrence of hazards of an electrical nature.

B) The machinery shall meet the safety requirements stipulated in the Technical Regulation for Low Voltage Electrical Equipment and Appliances.

5/2 Static Electricity

Machinery shall be designed and installed in such a way as to prevent or limit the possibility of the accumulation of dangerous electric charges, or be provided with a vacuum system.

5/3 Sources of Non-electric Power Supplies

When a machine is supplied with a source of energy other than electricity, it shall be designed and equipped so that all potential hazards associated with other energy sources can be avoided.

5/4 Errors in Installation

5/4/1 Errors - which may occur when installing or re-installing certain parts in the machine - may be a source of hazard, sufficient instructional information shall be placed on these parts or on their packages in a way that shows movement directions to avoid the occurrence of risks.

5/4/2 The instruction manual shall include - when necessary - extensive information about such risks.

5/4/3 The design of the machinery shall prevent the occurrence of risks due to faulty connections, and sufficient instructional information shall be placed (fixed) on the parts to be connected, as well as on the electrical connection means whenever possible.

5/5 Extreme Temperatures

5/5/1 Special precautions shall be taken to prevent the risk of injury resulting from the operator touching or approaching parts of machinery or from materials with high or low temperatures.

5/5/2 Necessary steps shall be taken to avoid the risk of hot or cold scattered materials resulting from machine operation.

5/6 Fires

The machinery shall be designed and installed in a way that helps avoid the hazard of fire, or the hazard of overheating due to the machine itself, or the danger from gases, liquids, dust, vapors or other materials resulting from the use of some machinery.

5/7 Explosions

The machinery shall be designed in such a way as to prevent danger from the explosion of the machinery themselves, or from gases, liquids, dust, vapors, or other substances resulting from operating the machinery or the materials used in them.

The machinery shall meet - whenever there is a risk of explosion as a result of using the machinery - the requirements of the technical regulations and standards related to the design and use of equipment used in explosive atmospheres.

5/8 Noise

5/8/1 The machinery shall be designed and installed in a way that limits (reduces) the risks resulting from noise emissions to the lowest possible level, taking into account the use of advanced technical means, and the provision of means to reduce noise, especially at noise sources.

5/8/2 The level of noise emission can be assessed by reference to the relative emissions data for similar machinery.

5/9 Vibrations

5/9/1 The machinery shall be designed and installed in a way that limits (reduces) the risks resulting from the vibration emitted by them to the lowest level, taking into account the use of technical progress and the provision of means to reduce vibration, especially at the sources of vibration.

5/9/2 The level of vibration emissions can be assessed by reference to the relative emissions data for similar machinery.

5/10 Radiation

5/10/1 Unwanted emissions of radiation shall be prevented or reduced to the lowest possible level, so that they do not adversely affect individuals.

5/10/2 The ionic radiation emissions shall not exceed the minimum level of the machine need during operation and cleaning, and when there is a danger, the necessary precautions shall be applied.

5/10/3 Non-ionizing functional radiation emissions - during operation and cleaning - shall not increase to levels that do not adversely affect the health and safety of individuals.

5/11 Laser Radiation

When using laser equipment, the following shall be observed:

A) The laser equipment in the machinery shall be designed and installed in such a way as to prevent the sudden emission of radiation.

B) The laser equipment in the machinery shall be protected in such a way that the effective radiation and the radiation caused by reflection or diffusion, and the secondary radiation is harmless to health.

C) Optical equipment - intended for monitoring or modifying laser equipment - shall not pose any health risks from the laser.

5/12 Emissions of Hazardous Substances

5/12/1 The machinery shall be designed and installed in a way that helps avoid inhalation, ingestion, or contact with the skin, eyes, and mucous membranes, or their penetration into the skin.

5/12/2 The machine - in situations of unavoidable danger - shall be equipped in a way that helps contain, empty or precipitate hazardous materials by spraying with water, purifying or otherwise treating with similar effectiveness.

5/12/3 Containment or emptiness devices should be installed in a manner that achieves the maximum effect when the process cannot be fully contained during the normal operation of the machine.

5/13 Hazard of Restricting the Movement of Persons Inside the Machinery

Machinery shall be designed, installed, and fixed in such a way that parts of the body are not stuck therein, and if that is not possible, a way to seek help shall be provided.

5/14 Risks of Slipping, Tripping or Falling

5/14/1 The machinery parts - which people move around or stand on - shall be designed and installed in a way that prevents them from slipping, being trapped or falling off.

5/14/2 These parts shall be equipped - whenever possible - with fixed hand grips that suit the operator or user and enable him to maintain stability.

5/15 Risks of Lightning Bolt

Machinery that need protection from the impact of lightning bolt - while using them - shall be equipped with a special system for discharging such electrical charges to the ground.

5/16 Climatic Conditions

Machinery, safety components, and lifting equipment intended for operation, whether in open or non-air-conditioned environments, shall be designed in such a way as to enable them to operate safely in hot and humid conditions.

5/17 Electromagnetic Compatibility Requirements

A) Electromagnetic disturbance caused by machinery, safety components, and lifting equipment shall not exceed a level affecting the operation of radios, wired and wireless telecommunications equipment, or other equipment as required.

B) Machinery, safety components, and lifting equipment shall have fittings to protect against the expected hazard of Electromagnetic disturbance when used, making them work well without unacceptable risks when used for their intended purposes.

6 Maintenance

6/1 Maintenance of Machinery

6/1/1 The areas of adjustment and maintenance shall be located outside the hazardous areas and it must also be possible to carry out adjustment, maintenance, repair and cleaning processes within the time when machinery stop working.

6/1/2 If the implementation of one or more of the aforementioned cases fails for technical reasons, necessary precautions shall be taken to ensure that these processes can be safely executed as indicated in clause 2/5 above.

6/1/3 A malfunction detection device shall be provided and linked to the equipment when dealing with automated machinery or other machinery, in extreme cases.

6/1/4 The components of the automated machinery that need to be changed frequently shall be easily and safely removable and replaceable, provided that these components are changed using the necessary technical means, according to the specified operating method.

6/2 Access to Operation Modes and Service Points

Machinery shall be designed and installed in such a way as to allow safe access, adjustment and maintenance of all defective or malfunctioning components during the operation of the machinery.

6/3 Isolation of Energy Sources

6/3/1 Machinery shall be provided with special elements to isolate them from all sources of energy, and these insulators shall be clearly identified, and they shall be lockable whenever the reconnection poses a hazard to individuals, and for these insulators to be lockable, whenever the operator is unable - from any area he can access - to ascertain whether or not there is a power outage or not.

6/3/2 If electrical connection to the machine is possible, the operation can be easily stopped by removing the plug, provided that the operator shall verify that the plug is removed.

6/3/3 After the power supply is stopped - it shall be possible to discharge any residual or stored energy into the electrical circuits of the machine without exposing people to any hazard.

6/3/4 Exceptions to the above requirements are some requirements that may remain related to energy sources to be able to install parts, protect the information, illuminate interior parts, etc., In such case, exceptional precautions shall be taken to ensure operator's safety.

6/4 Operator Interference

Machinery shall be designed and equipped in such a way as to allow minimal operator's intervention, and if operator's interference is required, this shall be done easily and safely.

6/5 Cleaning of Internal Parts

The machine shall be designed and installed in a way that ensures that the internal parts containing hazardous materials can be cleaned, and these parts shall be protected from the outside, and if the machine fails to be protected from any foreign materials entering it, it shall be designed and installed in a way that allows it to be cleaned safely.

7 Information

7/1 Information and Warnings Affixed to the Machine

It is preferable to place indicative information and warnings on the machine in the form of symbols or illustrative pictures that are easy to be understood. Any written or verbal information or warnings shall be expressed in Arabic or in languages that are easy for users to understand.

7/1/1 Means of Communicating Information

A) The necessary information that facilitates the process of controlling the machinery shall be provided in a clear, simple and easy-to-understand manner, and it shall not be confusing the operator.

B) The visual display units or any other interactive means of communication between the operator and the machine shall be easy to understand and simple.

7/1/2 Warning Devices

A) Machinery shall be equipped with special devices to emit an optical or acoustic signal to warn at the times when the health and safety of persons is endangered due to the faults of operating the unsupervised machinery.

B) When machinery are equipped with warning devices, their signals shall be clear and easy to understand, and the operator shall have the ability to verify the efficiency of operation of all warning devices at all times.

C) The safety colors and signs shall be adhered to in accordance with the relevant standards.

7/1/3 Warning of Residual Risks

In situations where the risks remain despite the safety precautions inherent in the design have been taken, potential complementary protection precautions shall be followed and necessary warnings made clear, including warning devices.

7/1/4 Marking of Machinery

A) All machinery shall be clearly marked in a legible and non-removable manner, and the following minimum standards shall be applied:

1) The trade name and full address of the manufacturer and official representative - if applicable.

2) Naming Machinery.

3) Naming of the model or type.

4) Put the serial number - if any.

5) Put the date of manufacture.

B) It is prohibited to write a date contrary to the date of manufacture when placing it on the machine.

C) Machinery - designed for use in environments exposed to explosions - shall be marked with signs designated for the same.

D) The machinery shall include complete information regarding their type and methods of safe use, and that information is subject to the requirements mentioned in paragraph 7/1 above.

E) When moving machinery or part of them manually during normal use, and the mass of the machine or part is (15) kg, or when it is necessary to move the machine or one of its parts during the use of lifting equipment, the amount of mass shall be clearly and legibly mentioned.

F) Warning labels indicating the grave dangers that still exist (although precautionary precautions have been taken) shall be affixed, in addition to preparing personal protective equipment that shall be worn.

7/1/5 Instruction Manual

To ensure proper installation, use and safe maintenance, an instruction manual for operation shall be attached to all machinery. Instructions shall be written in accordance with the principles referred to below.

A) General principles for formulating instructions

1) The instructions shall be written in Arabic and may be written in another language in addition to the Arabic language.

2) In case there are no "original instructions" in Arabic, the manufacturer or supplier shall provide a translated version into the required languages. The translated instructions shall also be placed on the front cover and referred to as "Translation of the instructions from the original language into Arabic".

3) In the case of machinery intended for use by non-professional operators, the instructions shall be formulated in a manner that takes into account the general education and level of understanding of the operators.

B) Contents of Instruction Manual

The instruction manual shall contain - whenever necessary - the following minimum information:

1) Trade name and full address of the manufacturer and official representative.

2) Naming the machinery as specified thereon, with the exception of the serial number.

3) The manufacturer's declaration of conformity.

4) General description of the machinery.

5) Drawings, diagrams, illustrations and explanations necessary for the use, maintenance and repair of machinery, as well as verification of proper performance of their functions.

6) Description of the potential workplaces to be operated by potential operators.

7) Description of the intended use of the machinery.

8) Warnings about the methods in which the machinery shall not be used, whenever experiments have shown that the machinery can not be used in the wrong ways.

9) Assembly, installation, and wiring instructions, including diagrams, structural installation methods or machinery fixing means.

10) Instructions for assembly and installation related to reducing noise and vibration.

11) Guidance on the methods of using machinery and, if necessary, instructions for training the operators.

12) Information regarding risks that remain in place despite safety precautions inherent in the design and complementary preventive and protective measures are taken.

13) Guidance on the preventive measures that the user shall take, including personal protective equipment that shall be provided if required.

14) Basic properties of tools that can be used with machinery.

15) Conditions in which machinery meet stability requirements during use, transport, assembly or disassembly, when they are unsuitable for use or testing, or there are foreseeable malfunctions.

16) Instructions to ensure the safe completion of the transportation, processing and storage processes, taking into account the size of the machinery and their various parts, provided that those parts are transported regularly and each separately.

17) The method of operation to be followed in the event of an accident or malfunction, and if a blockage is likely to occur, that method shall include procedures to remove the blockage safely.

18) A description of the maintenance and modification processes that the user shall follow, along with the preventive measures that shall be noted.

19) Guidance on safely performing necessary adjustments and maintenance, including precautions to be taken while performing such processes.

20) Specifications of used spare parts - if they affect the safety and health of the operators.

21) Hearing protective warnings:

- Whenever it is likely that the emission sound pressure level at the operator position is higher than (80) dB, in normal use.
- A warning shall be provided stating that the operator's exposure to noise depends on the environment in which the equipment is used.
- It shall be noted that the noise measurement in the normal operating environment is done when any of the equipment starts to use, in order to determine whether hearing protection is required or not. The sound emission level may also be stated if desired by the manufacturer.

22) The machinery may emit non-ionized radiation, which may cause harm to people, especially individuals who have embedded medical devices, whether active or inactive, in addition to information related to the radiation emitted to the operator and persons at risk.

المواصفات السعودية
Saudi Standards

C) Sales Documents

Sales documents describing the machinery shall not conflict with guidance on health and safety aspects, and the documents shall describe the performance features of the machinery that shall contain the same information on vibration and noise emissions as stated in the instruction manual.

المواصفات السعودية
Saudi Standards

Annex (3)

Conformity Assessment Form (Type 1a) as per ISO/IEC 17067

(Type Approval)

1 Type Approval

Type approval is defined as one of the conformity assessment procedures, under which a notified body reviews and verifies the technical design of the product and declares that the technical design meets the requirements of the relevant Saudi Technical Regulations.

Type approval may be conducted by one of the two following methods:

A) Examination of a representative sample of the entire product, that represent the expected production (production model).

B) Assessment of the conformity of the technical design of the product by auditing the relevant technical documentation and manuals (design model), and examining of a representative sample of the expected production for one part or more involving hazardous parts of the product (a combination of the production model and the design model).

2 Procedures of Type Approval

2/1 Submission of a Type Approval Request to a Notified Body

The manufacturer shall submit a request for type approval to a notified body selected by the manufacturer, such request shall include:

A) Name and address of the manufacturer;

B) A written declaration not to submit the same request to any other Notified Body.

C) Technical documentation facilitating the assessment of the conformity of the product to the requirements of Saudi technical regulations. Such documentation shall include adequate analysis and evaluation of risks.

D) Technical documentation shall identify the requirements that apply to the product. Including, as required by the assessment, the design of the product, manufacturing and operation (use) of the product.

E) Technical documentation shall include – at least - the following:

1) A general description of the product.

2) Design and manufacturing drawings, horizontal projections (diagrams), components, units, subdivisions, etc.

3) Description and explanations, referred to therein, necessary to understand the drawings, diagrams, and the operation (use) of the product.

4) A list of the Saudi standards or any other relevant technical specifications adopted by SASO, whether fully or partially applied, and a description

of the adopted solutions to meet the essential requirements of the Saudi technical regulations in case of non-application of the aforementioned standards. In case of partial application of Saudi standards, the technical documentation shall clarify the applied clauses.

5) Report results (graph calculations) of the design, operation control, conducted tests, etc.

6) Test reports.

7) Representative samples of the planned production. The notified body may request additional samples, if necessary.

8) Evidences (proofs) supporting the appropriateness of the technical solutions applied in the design. Such evidence shall refer to all documents, particularly in case of non-application of the Saudi standards and/or the aforementioned appropriate technical specification. Supporting evidences – as applicable - shall include results of test conducted in the suitable laboratory in the manufacturer or any other laboratory under the responsibility of manufacturer.

2/2 Tasks of the Notified Body

2/2/1 With regard to the product, the notified body shall:

Study the technical documentation and supporting evidence for the purpose of assessment of the technical design of the product.

2/2/2 With regard to the samples, the notified body shall:

1) Ensure that the manufacturing of samples is conformant to the technical documentation, in addition to identifying the elements designed in accordance with the Saudi standards, and the elements designed in accordance with other standards.

2) Carry out appropriate examinations and tests, or outsource them in order to verify that the technical solutions adopted by the manufacturer meet the essential requirements specified in the standards, in case of non-application of the relevant standards.

3) Carry out appropriate tests or outsource them, in order to verify that – in case of non-application of Saudi standards and/or other appropriate standards - the technical solutions adopted by the manufacturer meet the essential requirements of the Saudi technical regulations.

4) Be in agreement with the manufacturer on the venue where tests should be conducted.

2/2/3 As for decisions made by the Notified Body:

1) The notified body shall issue an assessment report of the procedures carried out and their outputs. The notified body shall not publish, fully or partially, the report without the approval of the manufacturer.

2) In case the type meets the requirements of the Saudi technical regulations relevant to the concerned product, the Notified Body shall issue a Type Approval Certificate for the manufacturer. Such certificate shall include the name and address of the manufacturer, test results, the validity conditions thereof, if any, and all information required for identification of the certified type. The certificate may also include attachments.

3) The certificate, along with its attachments, shall include all necessary information required to assess the conformity of manufactured products, according to the tested type and for monitoring during operation.

4) In case the type is non-conforming to the requirements of the Saudi Technical Regulations applicable to the product, the Notified Body shall not issue the Type Approval Certificate and shall notify the applicant of its decision, stating detailed justifications for such decision.

5) The Notified Body shall follow all recognized technological developments. Whenever such developments indicate that the possibility that the certified type may no longer comply with the requirements of the Saudi Technical Regulations, the Notified Body shall determine to what extent further tests are required, and it shall inform the manufacturer accordingly.

6) The manufacturer shall inform the Notified Body, holding the technical documentation related to the Type Approval Certificate, of all modifications of the certified type, which may affect the conformity of the product to the requirements of the Saudi Technical Regulations, or to the terms of validity of the Type Approval Certificate. As such modifications require additional approval other than the primary Type Approval Certificate.

7) Notified bodies shall inform SASO of the Type Approval Certificates and any additions issued or withdrawn, and shall periodically, or upon request, provide a list of the Type Approval Certificates and any additions that has been rejected, suspended, or restricted in any way.

8) Each Notified Body shall inform the other accredited Notified Bodies of the Type Approval Certificates and any additions that has been rejected, suspended, or restricted in any way. In addition, they shall be informed, upon request, about Type Approval Certificates or any additions released.

9) Upon request, SASO and other Notified Bodies can obtain copies of the Type Approval Certificates and/or additions thereto. SASO may obtain copies of technical documentation and testing results carried out by the Notified Body, upon request. The Notified Body shall keep a copy of the Type Approval Certificate, its annexes and additions, in addition to the

technical documentation (including documents attached by the manufacturer) up until the certificate's expiration date.

10) The manufacturer shall keep a copy of the Type Approval Certificate, its annexes and additions thereto, in addition to the technical documentation. Furthermore, the manufacturer shall make all documents available to Regulatory Authorities and Market Surveillance Authorities for ten (10) years after placement of the product in the market.

11) The supplier may submit the request mentioned in Clause (2/1/1), and carry out the aforementioned tasks on behalf of the manufacturer, on the condition of the manufacturer's consent.

Annex (4)

Supplier Declaration of Conformity Form

This form shall be filled out on the Company's official papers

1) Supplier Data

- Name: ----------
- Address: ----------
- ----------
- Contact Person:
- Email: ----------
- Tel: ----------
- Fax: ----------

2) Product Details:

- Trademark of Product: ----------
- Type: ----------
- Product Description: ----------
- Class (according to Standards): ----------
- Reference Standards / Technical Specifications: ----------

We hereby declare that the product mentioned herein conforms to the Saudi Technical Regulation ( ) and the Saudi Standards annexed thereto.

Person in Charge: ----------

Company Name: ----------

Signature: ---------- Date --/--/-----